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(54) **METHOD AND SYSTEM FOR INFORMATION LABELING AND CONTROL**

VERFAHREN UND SYSTEM ZUR INFORMATIONSKENNZEICHNUNG UND -STEUERUNG

PROCEDE D'ETIQUETAGE INFORMATIF ET DE CONTROLE ET SYSTEME CORRESPONDANT

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(56) References cited:

WO-A-83/02208	**FR-A- 2 678 091**
GB-A- 2 209 417	**US-A- 4 225 884**
US-A- 4 554 584	**US-A- 5 168 372**
US-A- 5 172 111	**US-A- 5 387 942**
US-A- 5 485 518	**US-A- 5 524 195**
US-A- 5 550 575	**US-A- 5 583 576**

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Description

BACKGROUND

[0001] The present invention relates generally to information processing and more particularly to a system and method for information labeling and control in which a user can control access to information based on its content.

[0002] The rapid growth of the communications industry has brought about significant changes in society. The instantaneous access to countless information sources through television networks, home video, computers, and communication networks raises significant social, philosophical, ethical, legal, technical, and competitive issues. For example, a large number of TV programs which are easily available to the public are considered by many people to be harmful or offensive to them or their children. This is also true of certain information available on public computer networks. And while information providers enjoy a large degree of freedom in distributing their products, the only protection users who receive such information have is their right to turn it off or not turn it on. With such a large amount and wide variety of programs and information available, even these alternatives are more difficult than they first appear. These simple choices are not the only possible alternatives, and may not be acceptable alternatives, unless consumers of information can make informed decisions.

[0003] Labels have often been provided to allow users to understand the nature and content of products prior to their use. Food and cigarettes, for example, are often labeled to allow users to make informed choices without the need to first use the product. Medicines are not only labeled, they are often fitted with child-proof caps. This allows parents to make informed decisions and provides a means to help parents prevent unauthorized use by their children.

[0004] Until recently, information available to the general public has not presented a significant threat to users. For example, access to harmful or objectionable information through television networks has been relatively limited until recently. With the rapid growth of the communications industry, however, potentially harmful and/or offensive information is much more widely available.

[0005] Unlike the food and medicine industries, the communications industry has provided few means of labeling or restricting access to its products, due in part to the policy of favoring free speech. One such method, however, is described in U.S. Patent No. 4,528,529, entitled "Method and System for Subscription Television Billing and Access." In this system, a transmitted television program signal includes a code which identifies the category in which the program has been rated. The television system at home allows the user to set parameters which define an acceptable rating of programs for home viewing. Based on a comparison of the two settings, the system either denies or allows access to the program.

[0006] While the above system provides one method of restricting access to television programs containing offensive material, many other alternatives are possible to provide users with enhanced control over access to information.

SUMMARY

[0007] It is an object of the invention, therefore, to provide a method and apparatus for information labeling and control in which a user can control access to information based on its content.

[0008] It is a further object of the invention to provide a method and apparatus for information labeling and control so that a user can avoid access to portions of a program, film, file, CD-ROM, World Wide Web ("WWW") page etc., which are offensive or undesirable to the user, or in the case of a parent, the parent can prevent access to the information by children.

[0009] It is a further object of the invention to provide a method and apparatus for separately and continuously labeling and controlling audio, video, and data signals.

[0010] It is a further object of the invention to provide a method and apparatus for information labelling and control in which a substitute program signal is presented to a user instead of the offensive or undesirable portions of a program.

[0011] According to a first aspect of the invention, there is provided a method comprising:

transmitting a program signal and an information label to a user station; and
generating at the user station a local information label which is related to the transmitted information label, the method being characterized as having steps of:

blocking portions of the program signal from being presented to a user based on the transmitted information label and the local information label, wherein the transmitted information label has at least two values; and
transmitting an information signal representing the percentage of time during a program that the transmitted information label is rated at each of said at least two values.

[0012] According to another aspect of the invention, there is provided a communication system for using the method

of claim 1, the communication system being characterized as having:

a central station which transmits the program signal and the transmitted information label;
a user station which receives the program signal and the transmitted information label;
means for generating a local information label which is related to the transmitted information label;
means for blocking portions of the program signal based on the transmitted information label and the local information; and
means for transmitting an information signal representing the percentage of time during a program that the transmitted information label is rated at each of said at least two values.

[0013] The present invention thus provides several advantages to information producers and users. By continuously and dynamically electronically labeling programs and providing a means for users to enter their requirements, users gain by being able to make informed choices, producers and distributors gain by having a greater opportunity to provide what customers want, and society gains by maintaining freedom of choice and supporting informed decisions.

[0014] The present invention may be implemented in any environment in which a program signal is presented to a user, for example in a broadcast, cable, or satellite television system, on home video cassettes, compact discs, video discs, audio tapes, computer discs, video game cartridges, electronic books, Internet World Wide Web pages, computer networks, and other multimedia or communication systems. The system and method of the present invention may be built into new systems, integrated into existing systems, or provided by an external stand-alone unit.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The foregoing and other objects, features and advantages of the present invention will be more readily understood upon reading the following detailed description in conjunction with the drawings in which:

Figure 1 is a functional block diagram of an exemplary apparatus for information labeling and control;
Figure 2 is a functional block diagram of the central station equipment of Figure 1 according to an exemplary embodiment of the invention;
Figure 3 is a diagram of an exemplary information format for a transmitted information label TIL;
Figure 4 is a signal diagram illustrating an exemplary form of the video portion of the program signal with program labels as utilized in the system of Figure 1;
Figure 5 is an exemplary analog version of the viewer station equipment shown in Figure 1;
Figure 6 is an exemplary digital version of the viewer station equipment shown in Figure 1;
Figure 7 is an exemplary embodiment of the viewing control unit shown in Figure 1;
Figure 8 is an exemplary embodiment of the label interpretation unit shown in Figure 1;
Figure 9 is an exemplary analog version of the access control unit shown in Figure 1;
Figure 10 is an exemplary digital version of the access control unit shown in Figure 1;
Figure 11 is an exemplary embodiment of the frame storing unit shown in Figures 9 and 10;
Figure 12 is a diagram of a method for the transmission of substitute audio signals in an analog environment;
Figure 13 is an exemplary apparatus for the transmission of substitute audio signals; and
Figure 14 is a diagram showing a substitute video stream which provides substitute signals for program video streams A and B.

DETAILED DESCRIPTION

[0016] Referring now to Figure 1, an exemplary information labeling and control apparatus adapted for television viewing will be described. It should be understood that application of the present invention is not limited to television systems, and that it may be applied to any system of communication in which information is delivered to a user. In an exemplary embodiment for television, the apparatus comprises central station equipment 10 which supplies program signals to viewer station equipment 20 at each of the viewer stations. As will be described hereinafter in greater detail, the program signal includes audio and video signals as well as various synchronizing signals and labels. The audio and video signals can be generated from a conventional source such as television camera equipment. The program signal is supplied to the viewers either by conventional broadcast or cable techniques and can be transmitted with a suitable conventional transmitter. The program signal can be either scrambled (e.g., encrypted) or not scrambled (in the clear), and can be an analog signal, such as in the NTSC, PAL, or SECAM format, or a digital signal.

[0017] As shown in Figure 1, the central station equipment 10 may include a program labeling station 30 for generating or receiving the program signals and for generating the various synchronizing signals and labels, a storage unit 40 for storing the program signal after the labels have been generated and combined with the program signal, and a modulator

and transmitter 50 for transmitting the program signal to the viewer station equipment 20. The viewer station equipment 20 may include a tuner 60 or program selector 70 for receiving the program signal, a demodulator 80 and/or decoder 90 for demodulating and decoding the received program signal, a viewing control unit 100 which allows a viewer to control access to the received program signal by generating various local labels, a label interpretation unit 110 which evaluates and compares the locally generated and transmitted labels, an access control unit 120 which controls access to the program signal, and a modulator 130 for modulating the access controlled program signal onto a suitable carrier frequency prior to transmission to the TV antenna input.

[0018] Although Figure 1 shows a system in which the program signals and labels are transmitted to the viewer station equipment 20 by the modulator/transmitter 50, those skilled in the art will recognize that the present invention may be utilized in a system in which the central station functions to combine the program signals with the labels and to store the combined signal on a local storage device such as a compact disc, video disc, computer disc, audio tape, video tape, or video game cartridge. In such system, the user would receive the program signals and labels from the local storage device rather than from the modulator transmitter 50 of the central station equipment 10.

[0019] The central station equipment 10 is shown in greater detail in Figure 2. As shown, an exemplary program labeling station 30 includes a program material source 140 which can be any conventional generator of the audio and video program signals. A substitute source generator 150 may also be included for generating substitute audio or video program signals, for example to provide substitute signals during offensive or undesired portions of the program signal.

[0020] A label editor 160, which includes an information label generator 170 can be provided to generate a variety of labels or codes for labeling the program signals. The label editor 160 may comprise a video screen and a speaker for presenting to a viewer/editor the program signals received through transmission lines 185 from the program material source 140. The viewer/editor views the program signals and can command the label editor 160 to generate appropriate labels with the information label generator 170, for example according to the instantaneous content of the program signals. The label editor 160 may also comprise a mask code generator 180 for generating a mask code which is transmitted with the program signals for masking an offensive or undesirable portion of the video signal. A character generator 190 may optionally be provided to generate characters to be transmitted to the viewer station equipment 20 for display in accordance with a command signal sent by the label editor 160.

[0021] According to an exemplary embodiment of the invention, the information label generator 170, synchronized with the video signal, provides a transmitted information label TIL for transmission with the program signals. The transmitted information label TIL may be used to identify and characterize the content of the audio and video program signals. The TIL may be inserted into the video information stream, for example in the vertical retrace interval or at any other convenient location in an analog transmission. In a digital transmission, the TIL information can be inserted into the encoded information stream at any appropriate location. Depending on the amount of information contained in the TIL, the TIL may be inserted in an analog or digital video stream, for example on one or more lines, if necessary. Alternately, the TIL can be split over a number of frames.

[0022] A synchronization unit 200 controls the state of the program material source 140, the substitute source 150, and the character generator 190 so that the viewer/editor using the label editor 160 can control, e.g., stop, slow, or reverse, the program signals in order to facilitate the generation of the labels at the appropriate places in the program signal. The synchronization unit 200 also detects the appropriate synchronization pulse in the video signal, e.g., the vertical sync pulses during the vertical retrace interval, and supplies the sync pulse to the label editor 160 in order to allow the information label generator 170 to insert the transmitted information label TIL in the correct place in the video stream.

[0023] The information label generator 170 receives the sync signal from the synchronization unit 200 and generates the transmitted information label TIL, for example during the vertical retrace interval. If the present invention is implemented with a digital signal, the TIL may be inserted into any appropriate location in the digital video stream. The TIL is preferably transmitted on the same carrier frequency or channel as the video signal ("in band"), but may also be transmitted on a different channel or frequency ("out of band").

[0024] Figure 3 shows a diagram of an exemplary information format for a transmitted information label TIL which may include a suitable allocation for a synchronization header 210, general information labels 220, frame specific information labels 230, and a checksum 250. The transmitted information label TIL is preferably a digital code with a designated number of bits for each field within the structure; however, it will be understood that any well known coding technique, such as the tone burst technique described in U.S. Patent No. 3,824,332, entitled "Pay Television System", which is hereby incorporated by reference, may be utilized. Although the embodiment of the TIL shown in Figure 3 contains both general information labels 220 and frame specific information labels 230, other embodiments of the invention may contain either frame specific information labels or general information labels, but need not contain both.

[0025] The synchronization header 210 is provided to synchronize the TIL with a conventional data receiver 85 in the demodulator 80. The general information labels 220 contain information on the overall program signal. The frame specific information labels 230 may comprise labels which rate the instantaneous content of a frame of information. The checksum 250 may be a conventional 16 bit cyclic redundancy check for error checking.

[0026] The fields within the transmitted information label TIL may include any desired codes for labeling and controlling the program signals transmitted to the viewer station equipment 20. According to one embodiment, the transmitted information label TIL contains frame specific information labels 230 comprising an audio category label and a video category label which rate the content of the audio and video program signals in a particular frame. The audio and video category labels can each comprise one or more bits, and preferably comprise three or more bits so that each category label can define several levels or values of program content. The audio and video category labels can thus provide an instantaneous label of the content of the audio and video program signals in a television program. For example, the values 1 through 4 of the video category label can represent that the video signal is rated "G," "PG," "R," or "NC-17" at a particular point in time during the program:

1: Suitable for viewing by the public in general ("G");
2: Subject matter requiring parental guidance ("PG");
3: Restricted subject matter ("R"); and
4: NC-17-rated material ("NC-17").

[0027] A viewer/editor, using the label editor 160, can generate audio and video category labels which independently identify the instantaneous content of the audio and video signals. The category labels can be configured to accommodate additional or alternative values, such as "PG-13", for example.

[0028] A number of additional category labels may be allocated to more specifically label the content of the audio and video signals. Table 1 provides an example of the structure of an exemplary transmitted information label TIL which includes both general information labels 220 and frame specific information labels 230. The general information labels 220 contain information on the overall content of the program signals, as will be described below in greater detail. The frame specific information labels 230, as shown in the frame specific information labels portion of Table 1, may include a synchronization header, a frame rating label which rates the overall content of an individual frame, a frame theme label which categorizes the frame as having a particular theme such as comedy, tragedy, news, love story, adventure, etc., and labels which individually rate a level of violence content, sexual content, and/or foul language content of the audio and video signals of a particular frame of the program signal. The terms sex and violence are used in their broadest definition. They relate to all sexual or violent acts or allusions whether they be physical, emotional, psychological, intellectual, or racial.

[0029] Table 2 shows an example of the content of the transmitted information label TIL according to the structure shown in Figure 1. In the frame specific information labels in Table 2, a frame rating label of 0/(Unrestricted) is shown as well as a frame theme label specifying that the program is a news program. A video sexual content label is allocated to label a sexual content rating of the video signal from VS-0 to VS-7 (VS-7 signifying most sexually explicit, for example), and an audio sexual content label is allocated to label a sexual content rating of the audio signal from AS-0 to AS-7. Analogous audio and video violence content labels are provided, as well as a foul language content label for rating the instantaneous content of the dialog in a program from L-0 through L-7.

Table 1

Example Transmitted Information Label Structure		Size	Comments
GENERAL INFORMATION LABELS			
Sync		16	Synchronization Header
Name		320	Text field containing name
ID		64	Identification number
Rating		4	Overall rating of Information
Theme		80	Text field describing Theme of Information e. g. News
Description Text		320	Text Field containing descriptive text. This may change with time.
Rating Profile			Obtained from aggregate of frame labels
% Sexual Content			Structure describing percentage of level of sexual content of information
	level 0	4	No sexual content

Table 1 (continued)

Example Transmitted Information Label Structure		Size	Comments
GENERAL INFORMATION LABELS			
	level 1	4	Innuendo
	level 2	4	Partial Nudity
	level 3	4	Full frontal Nudity
	level 4	4	Explicit
% Violent Content			Structure describing percentage of level of violent content of information
	level 0	4	No violent content
	level 1	4	
	level 2	4	
	level 3	4	
	level 4	4	very violent content
%Foul Language			Structure describing percentage of level of bad language and sound content of information
	level 0	4	no foul language
	level 1	4	
	level 2	4	
	level 3	4	
	level 4	4	very foul language
Checksum		16	
Total General Information Label Size		880	
FRAME SPECIFIC INFORMATION LABELS			
Sync		16	Synchronization Header
Frame Rating		4	Rating of Individual frame
Frame Theme		80	Theme for Frame e.g. Comedy
Video Sexual Content level		3	Sexual content level of frame
Audio Sexual Content level		3	Sexual content level audio within frame
Video Violent Content level		3	Violent content level of frame
Audio Violent Content Level		3	Violent content level audio within frame
Foul Language Content level		3	Foul Language content level of frame
Audio and Video Access Processing Instructions			Instruction opcodes to provide information on how to process frames which exceed the LIL.
Video Opcode		48	Instructional Opcode for processing of video signals
parameters			parameters associated with Opcode
Audio Opcode		32	Instructional Opcode for processing of audio signals
parameters			parameters associated with Opcode
Padding		9	

Table 1 (continued)

FRAME SPECIFIC INFORMATION LABELS			
Checksum		16	
Total Frame Label Size		220	

Table 2

Example Transmitted Information Label		
GENERAL INFORMATION LABELS		
Sync		101010101010101
Name		The News Tonight
ID		12345678
Rating		2 (PG)
Theme		news
Text		Dissent in Congress
Rating Profile		
% Sexual Content		
	level 0; No sexual content	16
	level 1; Innuendo	0
	level 2; Partial Nudity	0
	level 3; Full frontal Nudity	0
	level 4; Explicit	0
% Violent Content		
	level 0	15
	level 1	1
	level 2	0
	level 3	0
	level 4	0
% Foul Language	level 0	14
	level 1	
	level 2	1
	level 3	0
	level 4	0
Checksum		1011 0101 0010 0111
FRAME SPECIFIC INFORMATION LABELS		
Sync		101010101010101
Frame Rating		0(Unrestricted)
Frame Theme		news
Video Sexual Content level		0
Audio Sexual Content level		0
Video Violent Content level		0

Table 2 (continued)

FRAME SPECIFIC INFORMATION LABELS		
Audio Violent Content level		1
Language Content level		1
Audio and Video Access Processing Instructions		
Video Opcode		Mask
parameters		25,100-330,400
Audio Opcode		bleep from line x to y
parameters		10, 525
Padding		0000 0000 0000
Checksum		0101 1101 0000 0101

[0030] As will be appreciated by those skilled in the art, any other desired frame specific information labels may be included in the transmitted information label TIL in accordance with the needs of the user. For example, "How To" programs can be labeled with descriptive text as being appropriate for expert or novice users, so that the user can be informed of and control the level of sophistication of the program. Programs that teach values to children can be labeled with descriptive text as to which value is being promoted so that parents can control and foster values they want their children to believe in. In other embodiments of the invention in which the program signal comprises a data signal, the TIL may include a data category label to characterize the content of the data.

[0031] Tables 1 and 2 also show that the frame specific information labels in the TIL preferably contain audio and video access processing instructions which comprise various codes for instructing the access control unit 120 in the viewer station equipment 20 as to how to process the incoming signals. For example, the audio and video access processing instructions may instruct the access control unit 120 to mask certain portions of the video signal or "bleep out" certain portions of the audio signal when the video category label or the audio category label are greater than the user desires. As shown in Tables 1 and 2, the audio and video access processing instructions may contain a video "opcode" or instruction code with video parameters and an audio opcode with audio parameters. The video opcode may contain, for example, a suitable code which instructs the access control unit 120 in the viewer station equipment 20 to mask certain portions of a video frame when the video signal is offensive. The video parameters provide the shape and coordinates of the mask for a particular frame. The audio opcode may contain a code which instructs the access control unit 120 in the viewer station equipment 20 to "bleep out" the audio signal for a certain duration when the audio signal is unacceptable. The audio parameters provide the start and end points of the substitute "bleep" signal. Other examples of video opcodes are as follows:

RectMask x,y u,v	rectangular mask with start co-ordinates x,y and stop co-ordinates u,v
BlurMask x,y u,v	rectangular blurring mask with start co-ordinates x,y and stop co-ordinates u,v
CircleMask x,y,r	Circular mask with center co-ordinates x,y and radius r pixels
Freeze frame	Display previous frame
Substitute ch,n	Switch to substitute information stream on channel ch for next frame, switch back after the nth frame. This may be time or frequency division multiplexed.

Other examples of audio opcodes are as follows:

Bleep x,f,n	Switch to tone generator with frequency f, at line x, for n lines
Substitute ch,x,n	Substitute audio from channel ch at line x for n lines, where ch may be a virtual channel number which identifies the location of the substitute audio stream.

[0032] The general information labels 220 of the transmitted information label TIL will now be described. As shown in the general information portion of Tables 1 and 2, exemplary general information labels 220 may include a synchronization header, a name label comprising a text field containing a name of the program, (e.g. "The News Tonight"), a program ID label for uniquely identifying the program, a rating label which contains an overall rating of the information or program, (e.g. "PG"), a theme label comprising a text field describing a theme of the overall information or program such as news, comedy, tragedy, etc., a textual label which may be used for transmitting descriptive text with the program

signals, and rating profile labels. As will be appreciated by those skilled in the art, many of the labels mentioned above may be utilized both in the frame specific information labels 230 and the general information labels 220.

[0033] The rating profile labels can be provided to assist the user in determining whether to view a particular program. The rating profile labels, as shown in Tables 1 and 2, may contain data relating to the percentage of time during the program that the program signal contains different levels of sexual material, violent material, or foul language. This data may be obtained, for example, by totaling the amount of time during a program that the frame specific information labels for each category (e.g. audio violence, video violence, audio sexual content, video sexual content, foul language) are rated at each level (e.g. levels 0-4). The rating profile labels may contain data, for example, which indicate that for 25 percent of the program, the audio signal is rated at level 2 for foul language or that for 20 percent of the program, the video signal is rated at level 3 for sexual content.

[0034] The rating profile labels may also contain data which characterize the content of the overall program signal, without distinguishing between audio and video. As shown in Tables 1 and 2, the rating profile labels may indicate the percentage of time that the overall program signal (e.g., either the audio signal, video signal, or both) is rated at each level (e.g. 0-4) for each category (e.g. sexual content, violence, foul language).

[0035] The rating profile labels may also contain data relating to the percentage of time during the program that the overall program signal or an individual audio or video signal is rated at each conventional rating such as "G", "PG", "R", or "NC-17". For example, the rating profile labels may indicate that a video signal for a program is rated "G" for 75 percent of the program, "PG" for 23 percent of the program, "R" for 2 percent of the program, and "NC-17" for none of the program. This data would indicate, therefore, that if the portions of the video signal rated above "PG", which would be translated to a rating profile label, were blocked, the program could be viewed without significant interruptions (2%), but that if portions of the video signal rated above "G" were blocked, the viewer would experience significant interruptions (25%).

[0036] The viewer station equipment 20 preferably includes a character generator (see Figures 9 and 10) in the access control unit 120 which generates characters to display 'on the viewer's screen a table of the information contained in the rating profile, as well as any information contained in the other transmitted category labels in the TIL, if desired. This advantageous feature allows a user to make informed viewing decisions based on the transmitted information labels. For example, the user can estimate the amount of offensive material contained in a program as well as the amount of time that a program signal would be blocked.

[0037] As described above, the transmitted information label TIL may include a suitable number of bits in the general information labels 220 allocated for "description text" which contains a textual description relating to the program signals, such as a textual description of the content of the audio and video signals. The description text may be displayed by a character generator in the viewer station equipment 20 to display, for example, a textual description of the violent scenes in a film, or reasons why the film was rated as "NC-17" during certain portions. Or, the description text may contain a message that certain portions of the program have been rated "R" due to obscene language, but not obscene video. Such information thus allows the user to make an informed decision as to whether to view a program without first being exposed to the program.

[0038] According to a further embodiment of the invention, the description text may also contain information on consumer products shown or described in the program signal. For example, the source of products or services shown in a program can be transmitted in the description text and displayed on the viewer's screen. In this way, when a viewer sees or hears about a product he or she likes in a program, the viewer can obtain information on how to purchase the product through the display of the description text on the viewer screen. Clothing, appliances, and musical recordings are examples of products for which a viewer can obtain purchasing information. According to this embodiment, the description text may include a phone number, a price, or any other desired information on the product or service which enables a viewer to purchase the product.

[0039] The description text can be adapted to transmit many other types of textual information. For example, when the program is a sporting event, the description text may be adapted to display on the viewer's screen the statistics of a team or particular player.

[0040] The program ID label shown in the general information portion of Table 1 can be added in the central station equipment 10 to identify a program for billing purposes, as described in U.S. Patent No. 4,528,589, entitled "Method and System for Subscription Television Billing and Access".

[0041] The program ID label can comprise any suitable number of bits which would enable the program to be uniquely identified. If scrambling is implemented, a scramble code may be provided by a scramble code generator in the central station equipment 10 along with the transmitted information label TIL for transmission with the program signal. If the program signals are scrambled prior to transmission, the scramble code can be combined with the transmitted information label TIL and the program video signal, as is described in the above referenced U.S. Patent No. 4,528,589.

[0042] An advantage of providing the viewer with the capability of displaying the labels in the TIL on the viewer's screen is that the viewer will learn how various types of programs are labeled. With the character generator in the access control unit 120, any of the various labels described above can be displayed so that the viewer can view the

labels as the program is being viewed. In this way, the viewer will become familiar with the types of program material which is rated at a particular level such as "PG" or "R", or which is characterized as a comedy or as an expert "How To" program. The audio and video access processing instructions may contain a designated number of bits which instruct the access control unit 120 to display the transmitted labels on the viewer screen as they are received if commanded by the viewer.

[0043] Referring again to Figure 2, the program signal, the transmitted information label TIL, and any other labels and substitute program signals are supplied to a signal combiner 260. In an NTSC, PAL, or SECAM transmission, for example, the signal combiner 260 receives the program signals and label signals and combines these signals in a conventional manner to produce a signal such as that illustrated in Figure 4. As shown in Figure 4, the successive horizontal lines of an analog video signal are conventionally separated by horizontal synchronization pulses, and each frame of the video signal is separated by a vertical retrace interval or vertical synchronization signal. During the vertical retrace interval, various equalizing and synchronization pulses are provided, and it is in this interval that the transmitted information label TIL and other labels are preferably combined with the transmitted information signal. These labels are preferably encoded in a digital form as illustrated in Figure 4 although any well known coding technique, such as the tone burst technique described in U.S. Pat. No. 3,824,332, may be utilized. Each program that is transmitted may thus be identified, characterized, and described by placing the transmitted information label TIL and other labels in the video signal during the vertical retrace interval, for example, or, if implemented in a digital system, at any convenient location in the digital video stream.

[0044] The combined signal is then transmitted to a storage unit 40, such as a VCR, which stores the combined signal so that copies of the program can be made which include the various labels and access processing instructions generated with the label editor 160. Copies of the program can be stored on conventional media such as a compact disc, video disc, audio tape, video tape, video game cartridge, etc. and distributed to users. In a television system, the combined signal is applied to the modulator and transmitter 50 for modulation onto a suitable carrier wave for either broadcast or cable transmission, for example.

[0045] The program signal as well as any substitute program signals transmitted by the central station equipment 10 are received by a tuner 60, or in the case of a digital transmission a program selector 70 which may include a tuner, at the viewer station equipment 20. Figures 5 and 6 show exemplary analog viewer station equipment 22 and digital viewer station equipment 24, respectively. In the analog viewer station equipment 22 a conventional tuner 50 is provided for tuning to a desired channel frequency, while the digital viewer station 24 may also include a program selector 60, as more than one channel may be received on a single frequency. A viewing control unit 100 is provided to allow a viewer to select a desired program signal for viewing. Control of the tuner 50 or program selector 60, and thus selection of a particular carrier frequency or program, may be accomplished in a conventional manner by a remote control device or by a control knob on the viewing control unit 100.

[0046] The appropriate received signals are then supplied by the tuner 50 or program selector 60 to a conventional demodulator 80 in the analog viewer station equipment 22 or a conventional demodulator 80 and decoder 90 in the digital viewer station equipment 24. The demodulator/decoder 80/90 of the digital viewer station equipment demodulates and decodes the program signals to supply the digital audio, digital substitute audio, digital video, and digital substitute video signals to a digital access control unit 124. The demodulator 80 of the analog viewer station equipment 22 demodulates the programs signals to supply analog signals to an analog access control unit 122.

[0047] The video signal also contains the transmitted information label TIL and other labels in addition to video information. The transmitted labels are sent to the label interpretation unit 110 by the demodulator. The label interpretation unit 110 detects the information label TIL in the received video signal as well as other codes such as scramble codes, if appropriate.

[0048] The viewing control unit 100, in addition to providing a signal instructing the tuner 50 or channel selector 60 as to which program to select, also includes a local information label generator 270, as shown in Figure 7, for generating a local information label LIL to control access to the selected program signals. The local information label LIL includes local category labels which are preferably analogous in format to the transmitted category labels in the transmitted information label TIL shown in Figure 3. For example, the local information label LIL may include an audio category label and video category label which are analogous to the audio and video category labels in the TIL. Or, the LIL may include a video violence content label which is analogous to the video violence content label of the TIL. The local category labels are set by the user and can define the type and extent of access to the received program signals.

[0049] As with the transmitted category labels, the different values of the local category labels such as 1, 2, 3, and 4 can represent classifications of the content of the audio and video portions of the programs such as "G", "PG", "R", and "NC-17", respectively. As with the transmitted category labels in the TIL, additional local category labels can also be included in the LIL, such as for audio violence, audio sexual content, video violence, video sexual content, and foul language. Local category labels specifying acceptable types of stories, acceptable values, acceptable data, or any other desired category, can also be generated and set independently. Thus, a user who considers violence, but not sexual program material, offensive, can set the local audio and video violence category labels at a low violence rating

such as "AV-2" and "VV-2" and can set the local audio and video category labels for sexual content at a higher rating, such as "AS-6" and "VS-6". Moreover, the audio and video category labels can be set independently so that a user who is more offended by violent video than violent audio may set the local video violence category label higher than the local audio violence category label. Of course, the number and type of categories may be designed as desired, so that various embodiments of the invention can provide enormous flexibility in shaping the type of information which is accessible to a user. The local information label generator 270 combines the local category labels set by the user into a local information label LIL which is transmitted to the label interpretation unit 110.

[0050] The local information label generator 270 can generate a "local rating profile label" which is analogous to the transmitted rating profile label in the TIL. As described above, the transmitted rating profile label may contain information as to the percentage of time during a program that the overall program signal or individual program signals are rated at a certain level such as "PG" or "R". The local rating profile label preferably contains a suitable number of bits which allow a viewer to specify a maximum allowable percentage of time during a program that the program can be rated above a locally specified rating, such as "PG". The local rating profile label can also be configured to specify a maximum allowable percentage of time during a program that the individual program signals can be rated above a locally specified rating, such as AV-6, VV-7, AS-4, VS-3, or L-2. In this way, the viewer can limit with particularity the amount of objectionable or undesirable material in the program signals.

[0051] If a program contains more than the predetermined amount of objectionable material, the viewer may wish to deny access to the program completely, rather than view the program with numerous interruptions. The local rating profile label thus preferably includes a "full/partial blocking" label which allows a user to choose between viewing the program with interruptions (partial blocking) no matter how many, or blocking the program entirely if the percentage of the program containing offensive material is greater than the specified percentage (full blocking). For example, if 25 percent of the transmitted audio signal is rated above the locally chosen rating of "G", the user may choose with the "full/partial blocking" label to deny access to the program completely, rather than view the program with significant interruptions to the audio signal. The viewer may thus input to the viewing control unit 100 via remote control the various tolerable percentages for each local category, e.g., overall program, audio, and video, and the value of the full/partial blocking label. If the user specifies in the local rating profile label, for example, that the maximum allowable time percentage above the "G" rating for the overall program is 25 percent and chooses the "full blocking" option, and the transmitted rating profile label in the TIL indicates that 27 percent of the transmitted information is rated higher than "G", the program will be blocked in its entirety. This feature enables a user to avoid the situation in which a program is frequently interrupted. Alternatively, the user may set the "full/partial blocking" label on "partial" so that the program is viewed but with interruptions. As will be described in greater detail below, blocking can be implemented by a variety of methods, such as not tuning to the requested channel, not descrambling the requested channel if it is scrambled, tuning to an alternative channel, or displaying an information screen and no audio instead of the requested channel picture and audio.

[0052] As shown in Figure 7, the viewing control unit 100 may include a controller 280 which controls the generation of the local information label LIL. The viewing control unit 100 may also include plurality of category registers 290 for storing the local information label settings, e.g., the values selected by the viewer for the local audio, video, and rating profile labels. A register 300 may also be provided to store a locked channel list. The locked channel list 300 is accessible to the controller 280, which can deny access to any channels in the locked channel list 300 by sending the appropriate frequency control signals to the tuner 50 or program selector 60. A viewer would typically include in the locked channel list channels which contain a large amount of objectionable material, such as a sexually explicit channel or a horror movie channel.

[0053] The viewing control unit 100 can be used to supervise the content of incoming program signals and thus preferably includes a lock mechanism 310 for preventing the local information label LIL from being changed except with a personal identification number (PIN) or combination or physical key. According to one embodiment, the viewing control unit 100 includes a memory 320 for storing a master combination and an operating combination. The operating combination can be keyed in by a parent with a keypad 330 or remote control device to change the local audio and video category labels, for example. A comparator 340 in the viewing control unit 100 compares the operating combination stored in the memory 320 with the combination entered via the keypad 330, and if they are equal, enables the local information label LIL to be changed. Knowledge of the master combination allows a user to change the operating combination stored in the memory 320. The master combination can be kept in a safe place by parents so that it can be used to change the operating combination in the event that the operating combination is lost.

[0054] According to another exemplary method, the master combination can be retained by the manufacturer, and the operating combination can be changed by knowledge of the operating combination. Initially, the operating combination can be set to 0000, for example. If the operating combination is forgotten, parents may call the manufacturer who can provide instructions as to how to reset the operating combination to 0000. In order to maintain the security of the reset procedure, the key strokes necessary to reset the operating combination to 0000 preferably change each time the master combination is reset.

[0055] According to a further embodiment, the lock mechanism 310 can be a physical lock and key, for example made of metal or plastic. By inserting the key into the lock, parents can reset the operating combination to 0000.

[0056] The lock mechanism 310 thus preferably allows a user to change or input the local information label LIL only after entering the appropriate combination or PIN via the remote control. After keying in the correct PIN, the user, according to an exemplary embodiment next presses a specified button on the remote control to access the audio category labels, and increments or decrements the values with the audio volume control buttons, for example. The video category labels may be accessed with a different button and changed, for example, with the channel selector on the remote control. Other labels may be accessed and changed in a similar manner.

[0057] A memory 350, which may be a non-volatile memory, can be included in the viewing control unit 100 which contains default settings for the local information label LIL and locked channel list. The manufacturer may set default settings which may be reset by users and which would control access to the program signals after a power outage or before the user has stored the desired local labels in the viewing control unit registers 290 and 300. The default settings may be reset by a user with a remote control in a manner similar to the setting of the local information label LIL. The user may input default settings which are stored in the memory 350. The memory 350 preferably includes registers to store default settings for different times during a day. For example, the user may input a first group of default settings which are higher in the daytime hours when children are in school, lower in the late afternoon and evening when children watch TV, and higher again in the late evening when the children are asleep. The controller 280 may include a timer for determining when each set of default settings is active. As with the manufacturer-provided default settings, the user programmed default settings are preferably overridden by the local category labels. The controller 280 may be programmed to first look to the local user programmed labels, and if they are not available, to the default settings. The default labels or the user programmed labels stored in the registers 290 are output to the local information label generator 270 which generates the local information label LIL for transmission to the label interpretation unit 110.

[0058] The viewing control unit 100, if implemented with a billing system, may include additional controls to provide appropriate signals which indicate that the viewer has selected a program for viewing and has thus assumed the obligation to pay for that program. An example of such a billing system is provided in the above referenced U.S. Patent No. 4,528,589.

[0059] Referring back to Figures 5 and 6, the local information label LIL generated by the viewing control unit 100 is transmitted to a label interpretation unit 110, which also receives the instantaneous transmitted category labels in the transmitted information label TIL for the program being viewed from the video signal output from the demodulator. As shown in detail in Figure 8, the label interpretation unit 110 may include a comparator 370 which compares the transmitted information label TIL with the local information label LIL generated by the viewing control unit 100. The comparator 370 compares the locally generated audio and video category labels, for example, with the transmitted audio and video category labels, and generates a signal indicating whether the transmitted category labels are greater than the local category labels, in which case the program signals are blocked or modified.

[0060] The label information processor 380 receives the various category labels from the TIL and LIL and access processing instructions from the TIL as well as the output from the comparator 370 and generates appropriate audio and video access control signals 390 and 400. The comparator 370 looks at the received TIL data and compares it with the LIL data. In cases where the data fields of the TIL exceed the setting of the LIL, the TIL is output to the label information processor 380. The label information processor 380 extracts from the data structure the audio and video access control signals. These are then passed to the access control unit 120.

[0061] By way of example, if the local foul language label is set at 3, and the transmitted foul language label is 2, the label interpretation unit 110 will generate an audio access control signal 390 which instructs the access control unit 120 to allow the audio program signal to be transmitted the viewer. If the local video sexual content label is set at 2, and the transmitted video sexual content label is 3, the label interpretation unit 110 will generate a video access control signal 400 which instructs the access control unit 120 to modify or block the video signal before transmission to the viewer. The label interpretation unit 110, according to an exemplary embodiment, may thus allow the user to access program signals which are labeled with a transmitted category label which is less than or equal to the corresponding local category label. Access decisions such as this are preferably controlled with the audio and video access processing instructions in the TIL.

[0062] An exemplary analog access control unit 122 is shown in Figure 9, and an exemplary digital access control unit 124 is shown in Figure 10. The access control unit receives audio and video access control signals 390 and 400 from the label interpretation unit 110 and uses these signals to control access to the audio and video program signals and substitute signals received from the demodulator with an audio access control signal processor 460 and a video access control signal processor 480. The audio and video access control signals 390 and 400 preferably include access instructions for the access control unit 120. The audio and video access control signals 390 and 400 are generated in the label interpretation unit 110 in accordance with the audio and video access processing instructions contained in the transmitted information label TIL. The audio access control signal processor 460 preferably includes an audio access synchronization unit to synchronize the switch 410 according to the timing of the video signal and instructions

in the audio access control signal 390. A switch 420 is provided to control access to the video signals.

[0063] The audio access control signal processor 460 examines the audio access control signal 390 received from the label information processor 380 and interprets the instructions contained in the audio opcode of the TIL. For example, the audio access control signal processor 460 may be instructed by the audio access control signal 390 to bleep out a word with tone of 1000 Hz starting at line 200 for 15000 lines. The audio access control signal processor 460 would then carry out this function as required. Similarly the video access control signal processor 480 interprets the video access control signal 400 and performs the instructions contained in the video opcode of the TIL, e.g., rectangular mask from pixel 20,100 to 300,125.

[0064] According to one embodiment, the audio and video access control signals 390 and 400 instruct the audio and video access control signal processors 460 and 480 of the access control unit 120 to block transmission of the audio or video program signals when the transmitted category label exceeds the local category label. Thus, as shown in Figures 9 and 10, switches 410 and 420 are provided in the access control unit which are opened and closed in accordance with the audio and video access control signals 390 and 400 received from the label interpretation unit 110. The access control unit thus controls access to the audio and video program signals based on a comparison of the transmitted information label TIL and the local information label LIL. For example, if only the video category label is acceptable, as defined in the local information label LIL, the video portion of the program, but not the audio portion, is enabled so that the viewer is presented with only the video portion of the program. The audio and video category labels can thus be used to independently limit access by the viewer to the received audio and video program signals. The audio and video category labels can change with any frame, so that enabling of either signal is carried out at different times during the program depending on the transmitted audio and video category labels.

[0065] Because the received video signal preferably contains audio and video category labels in each vertical retrace interval or at an appropriate location in a digital video stream, the invention provides for the denial of access to only selected portions of a program. For example, in a program containing only a small amount of objectionable audio content, access can be denied only as to the objectionable audio content while access to the remainder of the program is allowed. In this way, only the objectionable material is blocked, rather than the entire program being blocked. The invention also allows for the resumption of the presentation of audio and video signals during the program to the viewer after the offensive or undesirable material has been blocked, because the label interpretation unit 110 can continually monitor the transmitted audio and video category labels. Of course, the other types of category labels, such as the audio violence, video sexual content, or data category labels can be used in the same way to control access to the program signals.

[0066] Referring again to Figures 5 and 6, the access controlled audio and video signals can be output to a conventional modulator 130. The modulator 130 modulates a carrier signal of an appropriate carrier frequency with the audio and video signals and supplies the program signals in the form of a modulated carrier wave to the television antenna terminals for use by the viewer's television set in a conventional manner. Alternately, the access controlled audio and video signals may be transmitted directly without modulation.

[0067] In some circumstances, a user may desire to deny access to a particular channel on a long-term basis. This may be accomplished with the register 300 in the viewing control unit 100 which comprises a locked channel list. As with the local category labels, the locked channel list 300 may be set or changed by a user after entering the correct PIN. The controller 280 may access the locked channel list 300 and instruct the tuner 50 or program selector 60 not to tune or select any channels listed in the locked channel list 300. In an analog system, frequency denial may be implemented by programming the tuner (synthesizer) 50 to not tune selected frequencies. This technique may be advantageously used to block an entire channel for an extended period of time, for example a horror movie channel. In a digital environment, the controller 280 of the viewing control unit 100 sends appropriate instructions to the program selector 60 to avoid a particular time slot in the case of time division multiplexing (TDM) or a particular code in code division multiple access (CDMA).

[0068] According to further embodiments of the invention, various substituted audio and video signals can be provided to the viewer when the content of the transmitted audio and video signals is offensive or undesirable, as defined by the local information label LIL. As will be described in greater detail below, these substituted audio and video signals can either be generated locally in the viewer station equipment 20 or generated at the central station equipment 10 and transmitted to the viewer station equipment 20.

[0069] According to one embodiment as shown in Figures 9 and 10, the access control unit 120 can include conventional hardware for generating substituted audio signals which are output to the modulator 130 in place of the received audio signals when the transmitted audio category label in the transmitted information label TIL exceeds the acceptable audio category label as defined by the local audio category label in the local information label LIL. In Figures 9 and 10, an audio signal generator 450 is provided in the access control units. The audio signal generator 450 can be activated by the label interpretation unit 110 via the audio access control signal 390 through the switch 410 to output a suitable signal such as a tone signal when the transmitted audio category label exceeds the local audio category label. Thus, for example, obscene language can be "bleeped" out at appropriate times with the audio signal generator

450.

[0070] A conventional character generator 470 can be activated by the label interpretation unit 110 through the switch 420 when the transmitted video category label exceeds the local video category label. The character generator 470 can output a signal containing an appropriate message to be displayed on the viewer's TV screen as a substitute for offensive portions of the video signal. A signal representing the displayed characters can be specified in the audio and video access processing instructions of the transmitted information label TIL and can be sent to the character generator 470 via the video access control signal processing unit 480 on a line 485. The character generator 470 can also output, for example, a signal representing a standard slide or picture, which has been pre-stored in a memory of the character generator, to be displayed during offensive portions of the received video signal.

[0071] According to a further embodiment of the invention as shown in Figures 9 and 10, the access control unit includes a frame storing unit 490 for allowing a "freeze frame" function. The frame storing unit 490, as shown in greater detail in Figure 11, includes a video memory 500, and in the case of an analog system, an analog to digital converter (ADC) 510 and a digital to analog converter (DAC) 520. In a digital system, the ADC and DAC are replaced with digital video interface units. The video memory 500, in conjunction with an input address generator 535 and a timing unit 555, stores the video signal as it is received. During an offensive scene, in accordance with the video access processing instructions of the TIL, when the transmitted video category label exceeds the local video category label, a freeze frame signal 530 may be sent by the video access control signal processor 480 to the input address generator 535 so that subsequently received video signals are not stored in the video memory 500. The label interpretation unit 110 also instructs the switch 420 to connect to the frame storing unit 490 which contains the last scene prior to the offensive scene. The video frame stored in the video memory 500 of the frame storing unit 490 is then refreshed on the video screen continuously as the output address generator 545 continues to generate output addresses for the data stored in the video memory 500. The frame storing unit 490 supplies the video signal to the modulator 130 for the duration of the offensive video signal. Therefore, the same still picture is seen by the viewer until a new video frame is supplied via the switch 420. In this way, the last scene is "frozen" when objectionable material is received. As will be appreciated by those skilled in the art, the "freeze frame" technique is used extensively, for example, in standard time base correctors (TBCs).

[0072] According to another embodiment, the program labeling station 30 in the central station equipment 10 includes a mask code generator 180 which generates a mask code signal defining a mask to be laid over offensive portions of a video screen. The mask can be in the shape of a circle, square, rectangle, or any other suitable shape. The mask code generator 180 generates a mask code signal defining the shape of the mask, the size of the mask, the coordinates of the mask on the TV screen at different points in time, and any other pertinent data. The coordinates and shape of the mask can be specified, for example, with the parameners contained in the video access processing instructions of the TGL, as shown in Table 1.

[0073] In the viewer station equipment 20, the label interpretation unit 110 determines whether the transmitted video category label exceeds the allowable video category label as defined by the local video category label. If the transmitted video category label is acceptable, the video signal is passed to the modulator 130 unaltered. However, if the transmitted video category label exceeds the local video category label, the label interpretation unit 110 transmits an appropriate video access control signal 400 instructing the video access control signal processing unit 480 in the access control unit 120 to command a local mask generator 540 to insert the mask defined by the mask code signal of the TIL into the video signal before passing the video signal to the modulator 130. The local mask generator 540 generates mask data and a mask address which are sent to the video memory 500 in the frame storing unit 490 as shown in Figure 11. In this way, only certain portions of a screen are blacked out, as opposed to the entire screen. For example, as shown in Figure 11, a mask can be defined by the mask code generator 180 and transmitted in the TIL which blocks a portion of an image on a screen and moves with the image through the scene.

[0074] The local mask generator 540 may also be adapted to produce a blurring effect mask instead of a blacked out mask. As shown in Figure 11, data from the video memory 500 may be sent to the local mask generator 540 which averages the video data and sends the averaged data back to the video memory 500, rather than sending a signal representing a blacked-out mask. The averaging of the video data produces a blurring effect which may be more aesthetically pleasing to a viewer than a blacked-out portion.

[0075] According to further embodiments of the invention, substituted audio, and/or video, and/or data signals can be transmitted to the viewer station equipment 20 from the central station equipment 10 which, for example, replace the entire normal audio, video, and data signals or portions thereof. For example, as described in U.S. Patent No. 4,410,911, entitled "Multiple Signal Transmission Method and System, Particularly for Television", a plurality of audio signals other than the normal audio signal can be provided in the composite television signal within the portion of the band allocated to audio transmission. Commonly known as a Separate Audio Program (SAP), these other audio signals are displaced in carrier frequency from the normal audio signal carrier frequency, but the composite audio is within the 200-250 KHz band allotted for audio transmission in the frequency band of a single television channel. Figure 12 shows one example of a method for transmitting substitute audio signals which may be implemented in an analog environment.

The audio signals shown in Figure 12 may include, for example, a regular audio signal 550, an alternative language audio signal 560, and a substitute audio signal 570. As described in the above referenced U.S. Patent No. 4,410,911, a conventional audio selector may be provided, for example in the demodulator/decoder unit 80/90 of the viewer station equipment 20, for recovering the individual audio signals. The access control unit 120 of the viewer station 20 also includes a switch 410, synchronized with the video signal and the audio access control signal 390, for switching in the substitute audio signal at the appropriate times. For example, in accordance with the transmitted audio category label and the audio access processing instructions of the TIL, the substitute audio signal can be switched in as the access controlled audio signal when the transmitted audio category label exceeds the locally generated audio category label.

[0076] In this embodiment, the transmitted information label TIL preferably includes an additional audio category label for each substitute audio signal. Thus, the information label generator 170 will generate an audio category label for each audio signal being transmitted. The transmitted information label TIL may also include audio access processing instructions which identify the locations of the additional audio signals in the transmitted information signal and which instruct the access control unit 120 to transmit to the viewer the audio signal having the highest acceptable rating, for example.

[0077] In the viewer station equipment 20, the label interpretation unit 110 compares the transmitted audio category label with the locally generated audio category label, and instructs the switch 410 to select the audio signal having the highest audio category label which does not exceed the locally generated audio category label. The switch 410 may thus include as many contacts as appropziate for the number of substitute audio signals. The selected audio signal is then transmitted to the modulator 130.

[0078] According to further embodiments of the invention, a substituted audio signal can be inserted into the video signal. A substitute audio signal can be compressed and inserted, for example, into the vertical retrace interval of an analog video signal along with the transmitted information label TIL, or in a digital system, in any appropriate location in the digital video stream. Thus, the signal combiner 260 of the central station equipment 10 receives the substitute audio signal and inserts the substitute audio signal into the video signal in a conventional manner. An additional audio category label which defines the content of the substitute audio signal, and audio access processing instructions defining the location of the substitute audio signal within the video signal, are also generated by the information label generator 170 and inserted into the video signal within the information label TIL. The substitute audio signal in the vertical retrace interval can be extracted from the video signal by the data receiver 85, decompressed, and stored for playback at the appropriate time, in accordance with the audio access processing instructions. Alternatively in a digital implementation the substitute audio is demultiplexed from the data stream.

[0079] According to a further embodiment of the invention, an additional audio signal is generated by the substitute source 150 and transmitted to an encoder 155 as shown in Figure 13, which inserts the additional audio signal in place of one or more of the standard 525 lines of the video signal. For example, as described in U.S. Patent No. 5,130,815, entitled "Method and Apparatus for Encoding a Video Signal Having Multi-Language Capabilities", a pre-selected number of scan lines located at the top or bottom portion of the video picture can be used to store audio information. One or more scan lines can be dedicated to each substitute audio channel. As shown in Figure 13, the encoder 155 is provided to insert the substitute audio signal into the top or bottom scan lines of the video signal at the appropriate time. The modified video signal output from the encoder 155 can be an NTSC compatible signal containing time division multiplexed audio channels. The modified video signal is transmitted to the viewer station equipment 20 where the audio signals are recovered using a decoder 165.

[0080] The decoder 165 recovers the substitute audio signal by sending the modified video signal at the appropriate time to an analog to digital converter in the decoder 165 which converts the substitute audio signal to a digital format. The digital substitute audio is subsequently stored and then converted into analog format after which it is transmitted to the viewer. The decoder 165 may also include a line blanking device to insert a null signal into those portions of the video signal where the audio information has been overwritten. When the video picture is displayed, this portion of the signal will appear to be a black line.

[0081] The information label generator 170 in the central station equipment 10 preferably generates an audio category label for each substitute audio signal, and the labels are received by the label interpretation unit 110. The information label generator 170 also generates appropriate access processing instructions which identify the location of the substitute audio signals within the video lines so that the substitute audio signals can be recovered. The label interpretation unit 110 instructs the access control unit 120 to transmit to the modulator 130 the audio signal having, for example, the greatest acceptable audio category label, as defined by the locally generated audio category label.

[0082] As will be appreciated by those skilled in the art, various interpolation techniques have been devised which allow for a reconstruction of the video signal using less than all of its 525 lines. Such interpolation techniques are useful, for example when the transmission of addition information requires more lines of video than those at the top or bottom portions of the video picture, as described above. The lines in the video signal which are replaced by the additional audio signal may then be reconstructed using known methods of line interpolation. For example, in accordance with appropriate instructions provided by the video access processing instructions of the TIL, the frame storing unit 490 of

the access control unit 120 can be used for interpolation to replace a missing line of video. As shown in Figure 11, an interpolation unit 495 can be provided to read two lines of the video signal adjacent to the missing line, calculate an average brightness and color of adjacent elements in the two lines, and overwrite the missing line in the video memory 500 with the average values.

[0083] Exemplary embodiments of the invention in which a substituted video signal is transmitted to the viewer station equipment 20 will now be described. According to one embodiment, a first video signal occupies the odd-numbered lines in the 525-line video signal, and a second video signal occupies the even-numbered lines in the 525-line video signal. Through known interpolation techniques as described above, either one of the video signals can be reconstructed for presentation to the viewer. The video access processing instructions in the TIL may thus contain appropriate instructions which direct the access control unit 120 to transmit the interpolated even or odd lines of the video signal. The video access processing instructions may be used for example to control the frame storing unit 490 to store in the video memory 500 the even lines of the video signal and an interpolation of the even lines of the video signal in place of the odd lines of the video signal. The interpolation may be accomplished in a conventional manner by averaging the color and intensity values of adjacent elements between even numbered lines. The interpolation unit 495 reads the even numbered lines in the video memory, calculates an average color and brightness value between elements in adjacent even-numbered lines, and writes the calculated average value over the existing odd-numbered line. The program code generator 170 in the central station equipment 10 generates an appropriate video category code for each video signal, so that the code interpretation unit 110 can instruct the access control unit 120 as to which video signal to interpolate and transmit.

[0084] According to a further embodiment, one or more dedicated channels are provided for transmitting a substitute video signal. As shown in Figure 14, a substitute video stream may be provided which contains substitute video signals for one or more programs. In Figure 14, the substitute video stream contains substitute video signals for program video streams A and B. In an analog environment, the substitute video stream is ordinarily provided on an additional frequency channel. In a digital system, the substitute video stream is preferably transmitted in a different time slot on the same frequency as the program video stream or streams, so that no frequency switching is necessary. However, it is of course possible to transmit the substitute video stream in a digital system on a different frequency. The substitute video stream preferably contains substitute video signals for an appropriate number of program signals such that no two of the program video streams A or B require substitute video signals simultaneously.

[0085] As shown in Figure 5, to access the substitute video stream in an analog system, the access control unit 122, following the video access control signals from the label interpretation unit 110, sends a substitution frequency change request to the viewing control unit 100, which instructs the tuner 50 via a frequency control signal to tune to the frequency of the substitute video stream. The substitute video stream is then transmitted to the viewer. The substitute video stream is preferably part of an entire television channel including an audio signal and appropriate program labels. In this way, the program labels of the substitute signal are used to direct the tuner 50 to tune to the regular program channel when the required substitution has ended.

[0086] The substitution may occur when, according to the video access processing instructions, the transmitted video category label exceeds the local video category label. The substitute video stream is preferably rated at the lowest rating such as "G" so that only one substitute video stream is necessary. However, it is of course possible to provide many substitute video streams at different ratings such as "PG" and "R" so that the substitute video signal will be rated as high as possible without exceeding the rating specified in the local video category label.

[0087] In a digital television system, the video signal may be transmitted in a time slot within a time frame using conventional Time Division Multiplexing (TDM) or Time Division Multiple Access (TDMA) techniques, for example. Thus, the substitute video signal preferably resides within a second time slot on the same frequency channel, so that it is not necessary to tune to a different frequency channel to obtain the substituted video signal. As shown in Figure 10, the video access control signal processor 480, as directed by the video access processing instructions, sends a substitute video time slot change request to the de-multiplexer 465 which accordingly transmits the appropriate time slot as the digital video stream. The substitute video stream may be processed in the frame storing unit 490 with the substitute video memory 565, which includes an appropriate timing unit and address generator, not shown in Figure 11 for simplicity.

[0088] In either the analog or the digital system, the transmitted information label TIL preferably includes an additional video category label for the substitute video signal, as well as information which identifies the time slot in which the substitute video signal is located. The label interpretation unit 110 may direct the access control unit 120 to transmit to the viewer the video signal having the highest acceptable video category label as defined by the local video category label.

[0089] According to a further embodiment of the invention, substitute audio and video signals can be transmitted in the unused spectrum of the transmitted program signal. It is well known that less bandwidth is used during some portions of a transmission than during other portions of the transmission. For example, in digital transmissions, less bandwidth is used to transmit dark scenes than bright ones and less bandwidth is used to transmit voice than music.

As will be appreciated by those skilled in the art, currently available compressed digital technology can put enough data for 10 or more channels in the bandwidth used for a single analog TV channel. The excess capacity of these systems may be used to transmit substitute audio or video signals synchronously with the original material or in advance to be stored at the user location in a substitute video memory 565 and clocked out of the substitute video memory 565 memory at the appropriate time as substitute audio and/or video.

[0090] Those skilled in the art will appreciate that, in addition to time division multiplexing, many other well known transmission techniques may be implemented in conjunction with the present invention to transmit and recover the program signals and substitute program signals. For example, Direct Sequence Spread Spectrum uses codes to separate information, and Frequency Hopping Spread Spectrum uses an instantaneous frequency location which is continuously changing to differentiate between information signals. Several spatial means of differentiating signals are also known in the art. Thus, the substitute program signals may be sent from different locations (space diversity) or with different polarities and later separated based on the transmission method. For example, the substitute program signal can be transmitted on the same frequency as the regular program signal, but at a different antenna polarity. As will be appreciated by those skilled in the art, satellite transmissions often use horizontal and vertical polarity to permit the transmission of two signals on the same frequency. According to another embodiment, the substitute signals are transmitted on the same frequency but at another phase. Quadrature phase modulation, for example, provides two signals on the same frequency but the phase of one is 90 degrees to the other. These signals can be detected separately. Various known data compression methods can also be used to compress the program signal and the substitute program signal so that they both can be transmitted in the space allocated for the program signal. Time spreading techniques, also known as Spread Time Code Division Multiple Access, and as described in U.S. Patent No. 5,101,432, entitled "Signal Encryption," which is hereby incorporated by reference, can be used for transmission and recovery of the program signals and substitute program signals. All of the above mentioned techniques can be implemented in conjunction with the present invention to send and recover the program signals and substitute program signals, as will be appreciated by those skilled in the art.

[0091] From the foregoing description, it will be apparent that exemplary embodiments of the invention provide the user with a great degree of control over the extent and type of information which may be accessed. With the transmission of substitute audio and video signals the user may also tailor received program signals to his or her individual tastes. A particularly suitable application for the present invention is with movies which have been produced in different versions. Motion picture producers frequently cut movies differently depending on the culture of the viewing audience. For example, movies are cut differently for US theatrical release, network television, Pay-TV, and airlines, as well as for European, Far East, Middle East, and Latin American markets. With the present invention, a user may select a particular film and control the content or version of the film based on the local category labels. Thus, the viewers benefit with the capability of making informed choices based on the transmitted category labels in the TIL, and the producers and distributors gain by having a greater opportunity to provide what customers want.

[0092] Although the present invention has been described primarily in the context of television and movies, it should be understood that the invention can be implemented in any system in which a program is delivered to a viewer. Electronic books, for example, in which words are displayed on a screen or projected through a speaker present another advantageous application. A substitute program signal may be provided which comprises an alternate portion of a dialog. Stories can thus be tailored to the preferences of a particular user with the local category labels which are set with a suitable control unit. Instructional programs can be appropriately presented to a pupil based on experience-level using the local category labels. Program signals comprising data or data files may be labeled, substituted, and controlled using the LIL and the TIL or other appropriate labels and control units.

[0093] Musical recordings are another example of an application for the present invention. Songs which contain offensive lyrics may thus be recorded in different versions and labeled accordingly. The listener using an appropriate control unit can input local audio category labels so that offensive lyrics will be blocked or substituted with acceptable lyrics. The substitute lyrics can be stored on the same medium as the program signal, such as a single compact disc, so as to be easily accessible. In an embodiment in which the program labels are not transmitted by cable or broadcast techniques, but rather reside on a single storage medium with the program signal, the label may be more appropriately referred to as a "program information label" PIL rather than a transmitted information label TIL.

[0094] Other types of hardware may also be implemented in conjunction with the present invention. For example, the program, including all substitute signals, may be stored on a single CD ROM, video disk, video tape, audio tape, or video game cartridge. The user may designate appropriate local information labels which control access to the information contained in the storage device. Exemplary embodiments of the invention thus allow information producers to provide more useful products to consumers and allow consumers a great degree of protection and control over information products.

[0095] According to further embodiments of the invention, the local information label LIL can be used to control the transmission of program signals from a central station. As shown in Figure 1, the system may include a communication link 15, such as a telephone line, a line in a two-way cable system, or a return path in a radio communication system,

by which the user can transmit the local information label LIL from the viewer station equipment 20 to the central station equipment 10. The central station equipment 10 preferably includes a label interpretation unit and an access control unit which process the code and program signals in a manner similar to that described above. The code interpretation unit, for example, determines whether the local category codes transmitted to the central station equipment 10 are less than the transmitted category codes within the program signal. The user can then be advised as to the availability of the chosen program in light of the user's local category labels. The customer can then decide if he/she wants to view the program and whether masking should be used. In addition, if the program has different versions, or has substitute audio and video signals, the particular program to be provided to the user can be determined by the local category labels. This embodiment may eliminate the need to send substitute signals to the viewer station equipment 20. It is particularly suited, for example, to a "video on demand" system in which each user has its own allocated channel.

[0096] According to another aspect of the present invention, a menu of programs can be presented to a user in accordance with the user's individual preferences. In many systems, a great number of programs are available to users at a particular time. Because so many programs are available, it may be time-consuming for a user to browse all programs before choosing one. Accordingly, the program menu signal, which may be transmitted to the viewer station equipment 20 on a designated channel, may include for each listed program, the transmitted information label TIL of each program, including, for example, the transmitted rating profile label which specifies the percentage of time during the program that the program is rated at various ratings. In the viewer station equipment 20, the TIL is compared with the LIL. Based on this comparison, only programs which comply with the LIL are listed on the menu presented to the viewer. By way of example, a user may specify in the LIL "musicals" and a particular actor to obtain a menu listing all available musicals in which the specified actor appears. The user may also specify in the local rating profile label the tolerable percentages of time at which a program may be rated at specified ratings, so that non-complying programs do not appear in the menu presented to the viewer. The acceptable programs are then listed on the screen and may be numbered sequentially 1, 2, 3, or in any other desired order, so that the user may select which programs to view or schedule for viewing at a later time by entering the appropriate number.

[0097] The above-described exemplary embodiments are intended to be illustrative in all respects, rather than restrictive, of the present invention. Thus the present invention is capable of many variations in detailed implementation that can be derived from the description contained herein by a person skilled in the art, as defined by the following claims.

Claims

1. An information labelling and control method comprising:

   transmitting a program signal and an information label to a user station; and
   generating at the user station a local information label which is related to the transmitted information label, the method being characterized as having steps of:

   blocking portions of the program signal from being presented to a user based on the transmitted information label and the local information label, wherein the transmitted information label has at least two values; and
   transmitting an information signal representing the percentage of time during a program that the transmitted information label is rated at each of said at least two values.

2. The method of claim 1, wherein the program signal comprises at least one of an audio signal and a video signal.

3. The method of claim 2, further comprising the step of transmitting a substitute audio signal to the viewer station within a bandwidth of the program signal allocated for audio transmission.

4. The method of claim 2, further comprising the step of transmitting a substitute audio signal to the viewer station in place of a portion of the video signal to the viewer station within a vertical retrace interval of the video signal.

5. The method of claim 2, further comprising the step of transmitting a substitute audio signal to the viewer station in place of a portion of the video signal representing a line of a television screen.

6. The method of claim 2, further comprising the step of transmitting a substitute audio signal to the viewer station in a portion of a spectrum allocated for transmission of video signals.

7. The method of claim 2, further comprising the step of transmitting substitute video signal to the viewer station of

a frequency channel which is different from a frequency channel on which the program signal is transmitted.

8. The method of claim 2, further comprising the step of presenting at least one of a substitute audio signal and a substitute video signal to the user.

9. The method of claim 8, wherein the substitute audio signal comprises a tone.

10. The method of claim 8, further comprising the step of generating the substitute video signal with a character generator.

11. The method of claim 8, wherein the substitute video signal defines a graphic display which is presented to the user when the video signal is blocked.

12. The method of claim 8, further comprising the step of transmitting the substitute video signal to the user station.

13. The method of claim 8, wherein the substitute video signal is generated at the user station.

14. The method of claim 1, further comprising the step of displaying the transmitted information label on a video screen.

15. The method of claim 1, wherein the program signal is a digital signal.

16. The method of claim 1, further comprising the step of resuming the presentation of the program signal to the user.

17. The method of claim 1, wherein the transmitted information label includes at least one of a violence content label and a sexual content label.

18. The method of claim 1 further comprising:

wherein the transmitted information label includes an audio category label and a video category label, and the audio category label and the video category label each have at least four values; and
wherein the information signal which indicates a percentage of time during the program that the audio category and the video category label are rated at each of said at least four values.

19. The method of claim 18, wherein the audio category label and the video category label each comprise at least one of a violence category signal and a sexual content category signal.

20. The method of claim 18, further comprising the step of blocking an entire program signal when the indicated percentage of time for a selected value of the audio category label or the video category label exceeds a predetermined percentage of time.

21. The method of claim 18, wherein the audio category label and the video category label are digital signals which each comprise at least two bits.

22. The method of claim 18, further comprising the step of independently varying, during the presentation of a program, the audio category label and the video category label according to a content of the audio signal and the video signal.

23. The method of claim 18, further comprising the step of freezing a frame of the video signal when the video signal is blocked.

24. The method of claim 18, further comprising:

making a portion of a video screen; and
blurring the masked portion of the video screen.

25. The method of claim 24, wherein the step of blurring is carried out by averaging data representing a portion of the program signal.

26. The method of claim 18, further comprising the step of transmitting a substitute video signal to the viewer station

on alternating lines of the video signal.

27. The method of claim 1, further comprising the step of transmitting to the user station a signal which includes a textual description of the content of the program signal.

28. The method of claim 27, wherein said signal further includes a description relating the content of the program signal to the transmitted information label.

29. The method of claim 1, wherein the program signal is divided into frames, and the transmitted information label is transmitted to the user station each time a frame of the program signal is transmitted to the user station.

30. The method of claim 1, further comprising the step of overriding said blocking of portions of said program signal.

31. The method of claim 1, further comprising:

wherein the program signal comprises at least one of an audio signal and a video signal, and at least one of the video signal and the audio signal is a digital signal; and
transmitting at least one of a substitute video signal and a substitute audio signal to the user station in at least one of a time slot, code sequence, phase, frequency, spatial location, and polarity which is different than that of the video signal and the audio signal.

32. The method of claim 1, further comprising:

specifying information rating level with at least one of a plurality of information labels, that is transmitted from an information provider station to the user station;
generating at the user station, in response to user input, a local information label which is related to one or more of the transmitted information labels and specifies one or more rating level of information which is acceptable to the user; and
creating a menu of available information based upon the local information label, the menu of available information excluding any information having a rating level outside the one or more rating levels specified by the local information label.

33. The method of claim 1, further comprising:

generating at the user station in response to user input a local information label which is related to one or more transmitted information labels and specifies one or more rating level of information which is acceptable to the user;
transmitting the local information label from the user station to the information provider; and
transmitting information from the information provider to a user based upon the local information label received from that user.

34. The method of claim 1, wherein said program signal comprises world wide web pages.

35. A communication system for using the method of claim 1, the communication system being characterized as having:

a central station which transmits the program signal and the transmitted information label;
a user station which receives the program signal and the transmitted information label;
means for generating a local information label which is related to the transmitted information label;
means for blocking portions of the program signal based on the transmitted information label and the local information; and
means for transmitting an information signal representing the percentage of time during a program that the transmitted information label is rated at each of said at least two values.

36. The communication system of claim 35, wherein the means for blocking is adapted to resume transmission of the program signal during the transmission of a program.

37. The communication system of claim 35, wherein the program signal is divided into frames, and the transmitted information label is transmitted to the viewer station during each frame.

38. The communication system of claim 35, wherein the program signal comprises at least one of an audio signal and a video signal.

39. The communication system of claim 35, wherein the transmitted category signal comprises at least one of an audio category label and a video category label.

40. The communication system of claim 35, wherein the transmitted program signal comprises an audio signal and a video signal and the means for blocking is adapted to independently block the audio signal and the video signal based on the audio category label and the video category label.

41. The communication system of claim 35, wherein the transmitted category label comprises a violence content label and a sexual content label.

42. The communication system of claim 35, further comprising:

means for presenting to a user a substitute program signal responsive to a local category label, wherein the substitute program signal and the program signal are digital signals which occupy at least one of different time slots, different code sequences, different phases, different frequencies, different spatial locations, and different polarities.

43. The communication system of claim 35, further comprising:

means for selecting a local information label; and
means for preventing the selection of the local information label from being changed, wherein the means for preventing comprises a combination lock having a changeable combination.

44. The communication system of claim 35, further comprising means for storing a default value for the local information label.

45. The communication system of claim 44, wherein the means for storing a default value is adapted to store different default values for different time periods during a day.

46. The communication system of claim 35, wherein the transmitted information label includes a signal representing descriptive text which describes a content of the program signal.

47. The communication system of claim 35, further comprising means for displaying the transmitted information label at the user station.

48. The communication system of claim 35, further comprising means for blocking an entire program signal based on said information signal.

49. The communication system of claim 35, wherein said program signal comprises world wide web pages.

50. A communication system for using the method of claim 18, the communication system being characterized as having:

a central station which transmits the program signal and the transmitted information label, wherein the transmitted information label includes an audio category label and a video category label, and the audio category label and the video category label each have at least four values;
a user station which receives the program signal and the transmitted information label;
means for generating a local information label which is related to the transmitted information label;
means for blocking portions of the program signal based on the transmitted information label and the local information; and
means for transmitting an information signal representing the perceatage of time during a program that the audio category and the video category label are rated at each of said at least four values.

51. The method of Claim 1, wherein the program signal and the information label are transmitted from a local storage device.

52. The method of Claim 51, wherein the local storage device comprises at least one of a compact disc, a video disc, a video tape, a computer disc, and a video game cartridge.

53. The method of Claim 8, wherein the program signal and the at least one of the substitute audio signal and the substitute video signal, or a combination of audio and video signals, are transmitted from a local storage device.

54. The system of Claim 35, wherein the central station stores the program signal on a local storage device, and the user station receives the program signal from the local storage device.

55. The system of Claim 35, wherein the central station stores the transmitted information label on the local storage device, and the user station receives the transmitted information label from the local storage device.

56. The system of Claim 55, wherein the local storage device comprises at least one of a compact disc, a video disc, a video tape, a computer disc, and a video game cartridge.

57. The system of Claim 54, wherein the stored program signal includes substitute program signals.

Patentansprüche

1. Ein Informations-Kennzeichnungs- und Steuerungsverfahren, folgendes aufweisend:

   Übertragen eines Programmsignals und eines Informationskennzeichens an eine Benutzerstation; und

   Erzeugen eines lokalen Informationskennzeichens an der Benutzerstation, welches in Beziehung mit dem übertragenen Informationskennzeichen steht; wobei das Verfahren durch die folgenden Verfahrensschritte gekennzeichnet ist:

   Sperren, dass Anteile des Programmsignals einem Benutzer dargeboten werden, basierend auf dem übertragenen Informationskennzeichen und dem lokalen Informationskennzeichen, wobei das übertragene Informationskennzeichen wenigstens zwei Werte aufweist; und

   Übertragen eines Informationssignals, welches den Prozentsatz der Zeit während eines Programms darstellt, bei welcher das übertragene Informationskennzeichen auf jeden der wenigstens zwei Werte eingestuft wird.

2. Das Verfahren gemäß Anspruch 1, wobei das Programmsignal wenigstens ein Audio- und ein Videosignal aufweist.

3. Das Verfahren gemäß Anspruch 2, ferner folgenden Verfahrensschritt aufweisend: Übertragen eines Ersatz-Audiosignals an die Zuschauerstation innerhalb einer Bandbreite eines für die Audioübertragung zugeordneten Programmsignals.

4. Das Verfahren gemäß Anspruch 2, ferner folgenden Verfahrensschritt aufweisend: Übertragen eines Ersatz-Audiosignals an die Zuschauerstation anstelle eines Anteils des Videosignals an die Zuschauerstation innerhalb eines vertikalen Rücklaufintervalls des Videosignals.

5. Das Verfahren gemäß Anspruch 2, ferner folgenden Verfahrensschritt aufweisend: Übertragen eines Ersatz-Audiosignals an die Zuschauerstation anstelle eines Anteils des Videosignals, das eine Zeile eines Fernsehbildschirmes darstellt.

6. Das Verfahren gemäß Anspruch 2, ferner folgenden Verfahrensschritt aufweisend: Übertragen eines Ersatz-Audiosignals an die Zuschauerstation in einem Anteil eines für die Übertragung von Videosignalen zugeordneten Spektrums.

7. Das Verfahren gemäß Anspruch 2, ferner folgenden Verfahrensschritt aufweisend: Übertragen eines Ersatz-Videosignals an die Zuschauerstation von einem Frequenzkanal, welcher verschieden von einem Frequenzkanal ist, auf welchem das Programmsignal übertragen wird.

8. Das Verfahren gemäß Anspruch 2, ferner folgenden Verfahrensschritt aufweisend: Darbieten von wenigstens einem eines Ersatz-Audiosignals und eines Ersatzvideosignals dem Benutzer.

9. Das Verfahren gemäß Anspruch 8, wobei das Ersatz-Audiosignal einen Ton aufweist.

10. Das Verfahren gemäß Anspruch 8, ferner den Verfahrensschritt des Erzeugens des Ersatz-Videosignals mit einem Zeichengeber aufweisend.

11. Das Verfahren gemäß Anspruch 8, wobei das Ersatz-Videosignal eine grafische Anzeige definiert, welche dem Benutzer dargeboten wird, wenn das Videosignal gesperrt ist.

12. Das Verfahren gemäß Anspruch 8, ferner den Verfahrensschritt des Übertragens des Ersatz-Videosignals an die Benutzerstation aufweisend.

13. Das Verfahren gemäß Anspruch 8, wobei das Ersatz-Videosignal bei der Benutzerstation erzeugt wird.

14. Das Verfahren gemäß Anspruch 1, ferner den Verfahrensschritt des Darstellens des übertragenen Informationskennzeichen auf dem Videobildschirm aufweisend.

15. Das Verfahren gemäß Anspruch 1, wobei das Programmsignal ein digitales Signal ist.

16. Das Verfahren gemäß Anspruch 1, ferner den Verfahrensschritt der Wiederaufnahme der Darbietung des Programmsignals an den Benutzer aufweisend.

17. Das Verfahren gemäß Anspruch 1, wobei das übertragene Informationskennzeichen wenigstens ein eines Gewalt-Inhaltskennzeichens und eines Sexual-Inhaltskennzeichens enthält.

18. Das Verfahren gemäß Anspruch 1, ferner folgendes aufweisend:

wobei das übertragenen Informationskennzeichen ein Audio-Kategoriekennzeichen und ein Video-Kategoriekennzeichen enthält, und wobei das Audio-Kategoriekennzeichen und das Video-Kategoriekennzeichen jeweils wenigstens vier Werte aufweisen; und

wobei das Informationssignal, welches einen Prozentsatz der Zeit während des Programms anzeigt, bei welcher das Audio-Kategorie- und das Video-Kategoriekennzeichen auf jedes der wenigstens vier Werte eingestuft werden.

19. Das Verfahren gemäß Anspruch 18, wobei das Audio-Kategoriekennzeichen und das Video-Kategoriekennzeichen jeweils wenigstens ein eines Gewalt-Inhaltskennzeichens und eines Sexual-Inhaltskennzeichens aufweist.

20. Das Verfahren gemäß Anspruch 18, ferner den Verfahrensschritt des Sperrens eines gesamten Programmsignals aufweisend, wenn der angezeigte Prozentsatz der Zeit für einen ausgewählten Wert des Audio-Kategoriekennzeichens oder des Video-Kategoriekennzeichens einen bestimmten Prozentsatz der Zeit überschreitet.

21. Das Verfahren gemäß Anspruch 18, wobei das Audio-Kategoriekennzeichen und das Video-Kategoriekennzeichen digitale Signale sind, welche jeweils wenigstens 2 Bit aufweisen.

22. Das Verfahren gemäß Anspruch 18, ferner den folgenden Verfahrensschritt aufweisend: Unabhängiges Variieren des Audio-Kategoriekennzeichens und des Video-Kategoriekennzeichens gemäß einem Inhalt des Audiosignals und des Videosignals während der Darbietung eines Programms.

23. Das Verfahren gemäß Anspruch 18, ferner den Verfahrensschritt des Einfrierens eines Vollbildes des Videosignals aufweisend, wenn das Videosignal gesperrt wird.

24. Das Verfahren gemäß Anspruch 18, ferner folgendes aufweisend:

Maskieren eines Anteils eines Videobildschirms; und

Unschärfeerzeugen des maskierten Anteils des Videobildschirms.

25. Das Verfahren gemäß Anspruch 24, wobei der Verfahrensschritt der Unschärfeerzeugung durch Mittelwertbildung von Daten, die einen Anteil des Programmsignals darstellen, ausgeführt wird.

26. Das Verfahren gemäß Anspruch 18, ferner den Verfahrensschritt des Übertragens eines Ersatz-Videosignals an die Zuschauerstation bei alternierenden Zeilen des Videosignals aufweisend.

27. Das Verfahren gemäß Anspruch 1, ferner den Verfahrensschritt des Übertragens eines Signals an die Benutzerstation aufweisend, welches eine inhaltliche Beschreibung des Inhalts des Programmsignals enthält.

28. Das Verfahren gemäß Anspruch 27, wobei das Signal ferner eine Beschreibung bezüglich des Inhalts des Programmsignals zu dem übertragenen Informationskennzeichen beinhaltet.

29. Das Verfahren gemäß Anspruch 1, wobei das Programmsignal in Vollbilder eingeteilt ist, und wobei das übertragene Informationskennzeichen an die Benutzerstation übertragen wird, immer wenn ein Vollbild des Programmsignals zu der Benutzerstation übertragen wird.

30. Das Verfahren gemäß Anspruch 1, ferner den Verfahrensschritt des Überlagerns der Sperrung der Anteile des Programmsignals aufweisend.

31. Das Verfahren gemäß Anspruch 1, ferner folgendes aufweisend:

wobei das Programmsignal wenigstens ein eines Audiosignals und eines Videosignals aufweist, und wobei wenigstens ein des Videosignals und des Audiosignals ein digitales Signal ist; und
Übertragung von wenigstens ein eines Ersatz-Videosignals und eines Ersatz-Audiosignals an die Benutzerstation in wenigstens einem eines Zeitschlitzes, einer Codesequenz, einer Phase, einer Frequenz, einer Ortsgebundenheit und einer Polarität, welche verschieden von der des Videosignals und des Audiosignals ist.

32. Das Verfahren gemäß Anspruch 1, ferner folgendes aufweisend:

Spezifizieren eines Informationseinstufungslevels mit wenigstens einem einer Vielzahl von Informationskennzeichen, welches von einer Informationsanbieterstation zu der Benutzerstation übertragen wird;

Erzeugen eines lokalen Informationskennzeichens, welches in Beziehung mit einem oder mehreren der übertragenen Informationskennzeichen steht und ein oder mehrere Einstufungslevels der Information spezifiziert, welche für den Benutzer zulässig ist, bei der Benutzerstation in Erwiderung auf eine Benutzereingabe; und

Gestalten eines Menus von verfügbarer Information basierend auf das lokale Informationskennzeichen, wobei das Menu von verfügbarer Information jede Information sperrt, welche ein Einstufungslevel aufweist, das sich außerhalb des einen oder der mehreren mittels des lokalen Informationskennzeichens spezifizierten Einstufungslevels befindet.

33. Das Verfahren gemäß Anspruch 1, ferner folgendes aufweisend:

Erzeugen eines lokalen Informationskennzeichens bei der Benutzerstation in Erwiderung auf eine Benutzereingabe, welches sich auf ein oder mehrere übertragene Informationskennzeichen bezieht und einen oder mehrere Einstufungslevel von Information spezifiziert, die für den Benutzer zulässig ist;

Übertragen des lokalen Informationskennzeichen von der Benutzerstation an den Informationsanbieter; und

Übertragen von Information von dem Informationsanbieter zu einem Benutzer basierend auf das von diesem Benutzer empfangene, lokale Informationskennzeichen.

34. Das Verfahren gemäß Anspruch 1, wobei das Programmsignal World-Wide-Web-Seiten enthält.

35. Ein Kommunikationssystem zur Verwendung des Verfahrens gemäß Anspruch 1, wobei das Kommunikationssystem **dadurch gekennzeichnet ist, dass** es folgendes aufweist:

eine zentrale Station, die das Programmsignal empfängt und das Informationskennzeichen überträgt;

eine Benutzerstation, die das Programmsignal und das übertragene Informationskennzeichen empfängt;

eine Einrichtung zum Erzeugen eines lokalen Informationskennzeichens, welches dem übertragenen Informationskennzeichen entspricht;

eine Einrichtung zum Sperren von Anteilen des Programmsignals basierend auf dem übertragenen Informationskennzeichen und der lokalen Information; und

eine Einrichtung zum Übertragen eines Informationssignals, welches den Prozentsatz der Zeit während eines Programms, bei welcher das übertragene Informationskennzeichen auf jedes der wenigstens zwei Werte eingestuft wird.

36. Das Kommunikationssystem gemäß Anspruch 35, wobei die Einrichtung zum Sperren derart ausgelegt ist, die Übertragung des Programmsignals während der Übertragung eines Programms wiederaufzunehmen.

37. Das Kommunikationssystem gemäß Anspruch 35, wobei das Programmsignal in Vollbilder eingeteilt ist, und das übertragene Informationskennzeichen zu der Zuschauerstation während jedes Vollbildes übertragen wird.

38. Das Kommunikationssystem gemäß Anspruch 35, wobei das Programmsignal wenigstens eines von einem Audiosignal und einem Videosignal enthält.

39. Das Kommunikationssystem gemäß Anspruch 35, wobei das übertragene Kategoriesignal wenigstens ein von einem Audio-Kategoriekennzeichen und einem Video-Kategoriekennzeichen enthält.

40. Das Kommunikationssystem gemäß Anspruch 35, wobei das übertragene Programmsignal ein Audiosignal und ein Videosignal enthält, und die Einrichtung zum Sperren derart ausgelegt ist, um unabhängig das Audiosignal und das Videosignal zu sperren basierend auf dem Audio-Kategoriekennzeichen und dem Video-Kategoriekennzeichen.

41. Das Kommunikationssystem gemäß Anspruch 35, wobei das übertragene Kategoriekennzeichen ein Gewalt-Inhaltskennzeichen und ein Sexual-Inhaltskennzeichen enthält.

42. Das Kommunikationssystem gemäß Anspruch 35, ferner folgendes aufweisend:

eine Einrichtung zum Darbieten eines Ersatz-Programmsignals an einen Benutzer, welches ansprechend auf ein lokales Kategoriekennzeichen ist, wobei das Ersatz-Programmsignal und das Programmsignal digitale Signale sind, welche wenigstens eines von verschiedenen Zeitschlitzen, verschiedenen Code-Sequenzen, verschiedenen Phasen, verschiedenen Frequenzen, verschiedenen Ortsgebundenheiten und verschiedenen Polaritäten belegen.

43. Das Kommunikationssystem gemäß Anspruch 35, ferner folgendes aufweisend;

eine Einrichtung zum Auswählen eines Informationskennzeichen; und

eine Einrichtung zum Verhindern, dass die Auswahl des lokalen Informationskennzeichens geändert wird, wobei die Einrichtung zum Verhindern eine Kombinations-Datensperre mit einer abänderbaren Kombination aufweist.

44. Das Kommunikationssystem gemäß Anspruch 35, ferner eine Einrichtung zum Speichern eines Standardwerts für das lokale Informationskennzeichen aufweisend.

45. Das Kommunikationssystem gemäß Anspruch 44, wobei die Einrichtung zum Speichern eines Standardwerts derart ausgelegt ist, um verschiedene Standardwerte für verschiedenen Zeitperioden während eines Tages zu speichern.

46. Das Kommunikationssystem gemäß Anspruch 35, wobei das übertragene Informationskennzeichen ein Signal

enthält, welches einen beschreibenden Text darstellt, der einen Inhalt des Programmsignals beschreibt.

47. Das Kommunikationssystem gemäß Anspruch 35, ferner eine Einrichtung zum Darstellen des übertragenen Informationskennzeichens bei der Benutzerstation aufweisend.

48. Das Kommunikationssystem gemäß Anspruch 35, ferner eine Einrichtung zum Sperren eines gesamten Programmsignals basierend auf dem Informationssignal aufweisend.

49. Das Kommunikationssystem gemäß Anspruch 35, wobei das Programmsignal World-Wide-Web-Seiten enthält.

50. Ein Kommunikationssystem zur Verwendung des Verfahrens von Anspruch 18, wobei das Kommunikationssystem **dadurch gekennzeichnet ist, dass** es folgendes aufweist:

eine zentrale Station, welche das Programmsignal und das übertragene Informationskennzeichen überträgt, wobei das übertragene Informationskennzeichen ein Audio-Kategoriekennzeichen und ein Video-Kategoriekennzeichen enthält, und das Audio-Kategoriekennzeichen und das Video-Kategoriekennzeichen jeweils wenigstens vier Werte aufweisen;

eine Benutzerstation, welche das Programmsignal und das übertragene Informationskennzeichen empfängt;

eine Einrichtung zum Erzeugen eines lokalen Informationskennzeichens, welches in Bezug zu dem übertragenen Informationskennzeichen steht;

eine Einrichtung zum Sperren von Abschnitten des Programmsignals basierend auf dem übertragenen Informationskennzeichen und der lokalen Information; und

eine Einrichtung zum Übertragen eines Informationssignals, welches den Prozentsatz der Zeit während eines Programms darstellt, bei welcher das Audio-Kategorie- und das Video-Kategoriekennzeichen auf jeden der wenigstens vier Werte eingestuft werden.

51. Das Verfahren gemäß Anspruch 1, wobei das Programmsignal und das Informationskennzeichen von einer lokalen Speichervorrichtung übertragen werden.

52. Das Verfahren gemäß Anspruch 51, wobei die lokale Speichervorrichtung wenigstens eines einer Compact Disc,. einer Video Disc, eines Videobandes, einer Computer Festplatte und eines Videospiel-Datenträgers aufweist.

53. Das Verfahren gemäß Anspruch 8, wobei das Programmsignal und das wenigstens eine des Ersatz-Audiosignals und des Ersatz-Videosignals, oder eine Kombination der Audiound Videosignale von einer lokalen Speichervorrichtung übertragen werden.

54. Das System gemäß Anspruch 35, wobei die zentrale Station das Programmsignal auf einer lokalen Speichervorrichtung speichert, und die Benutzerstation das Programmsignal von der lokalen Speichervorrichtung empfängt.

55. Das System gemäß Anspruch 35, wobei die zentrale Station das übertragene Informationskennzeichen auf der lokalen Speichervorrichtung speichert, und die Benutzerstation das übertragene Informationskennzeichen von der lokalen Speichervorrichtung empfängt.

56. Das System gemäß Anspruch 55, wobei die lokale Speichervorrichtung wenigstens eines einer Compact Disc, einer Video Disc, eines Videobandes, einer Computer Festplatte und eines Videospiel-Datenträgers aufweist.

57. Das System gemäß Anspruch 54, wobei das gespeicherte Programmsignal Ersatz-Programmsignale enthält.

Revendications

1. Procédé d'étiquetage et de commande d'information comprenant :

l'émission d'un signal de programme et d'une étiquette d'information vers une station d'utilisateur; et

la génération à la station d'utilisateur d'une étiquette d'information locale qui est liée à l'étiquette d'information émise, le procédé étant **caractérisé par le fait qu'**il comporte des étapes consistant à :

bloquer des parties du signal de programme pour empêcher qu'elles soient présentées à un utilisateur, sur la base de l'étiquette d'information émise et de l'étiquette d'information locale, l'étiquette d'information émise ayant au moins deux valeurs; et
émettre un signal d'information représentant le pourcentage de temps au cours d'un programme pendant lequel l'étiquette d'information émise est fixée à chacune des au moins deux valeurs.

2. Procédé selon la revendication 1, dans lequel le signal de programme comprend au moins l'un d'un signal audio et d'un signal vidéo.

3. Procédé selon la revendication 2, comprenant en outre l'étape consistant à émettre un signal audio de substitution vers la station de téléspectateur, à l'intérieur d'une largeur de bande du signal de programme allouée pour la transmission audio.

4. Procédé selon la revendication 2, comprenant en outre l'étape consistant à émettre un signal audio de substitution vers la station de téléspectateur à la place d'une partie du signal vidéo dirigé vers la station de téléspectateur, à l'intérieur d'un intervalle de retour vertical du signal vidéo.

5. Procédé selon la revendication 2, comprenant en outre l'étape consistant à émettre un signal audio de substitution vers la station de téléspectateur à la place d'une partie du signal vidéo représentant une ligne d'un écran de télévision.

6. Procédé selon la revendication 2, comprenant en outre l'étape consistant à émettre un signal audio de substitution vers la station de téléspectateur dans une partie d'un spectre alloué pour la transmission de signaux vidéo.

7. Procédé selon la revendication 2, comprenant en outre l'étape consistant à émettre un signal vidéo de substitution vers la station de téléspectateur dans un canal de fréquence qui est différent d'un canal de fréquence sur lequel le signal de programme est émis.

8. Procédé selon la revendication 2, comprenant en outre l'étape consistant à présenter à l'utilisateur au moins l'un d'un signal audio de substitution et d'un signal vidéo de substitution.

9. Procédé selon la revendication 8, dans lequel le signal audio de substitution comprend une tonalité.

10. Procédé selon la revendication 8, comprenant en outre l'étape consistant à générer le signal vidéo de substitution avec un générateur de caractères.

11. Procédé selon la revendication 8, dans lequel le signal vidéo de substitution définit une visualisation graphique qui est présentée à l'utilisateur lorsque le signal vidéo est bloqué.

12. Procédé selon la revendication 8, comprenant en outre l'étape consistant à émettre le signal vidéo de substitution vers la station d'utilisateur.

13. Procédé selon la revendication 8, dans lequel le signal vidéo de substitution est généré à la station d'utilisateur.

14. Procédé selon la revendication 1, comprenant en outre l'étape consistant à visualiser sur un écran vidéo l'étiquette d'information émise.

15. Procédé selon la revendication 1, dans lequel le signal de programme est un signal numérique.

16. Procédé selon la revendication 1, comprenant en outre l'étape consistant à reprendre la présentation du signal de programme à l'utilisateur.

17. Procédé selon la revendication 1, dans lequel l'étiquette d'information émise comprend au moins une étiquette de contenu de violence et une étiquette de contenu sexuel.

18. Procédé selon la revendication 1, dans lequel, en outre :

l'étiquette d'information émise comprend une étiquette de catégorie audio et une étiquette de catégorie vidéo, et l'étiquette de catégorie audio et l'étiquette de catégorie vidéo ont chacune au moins quatre valeurs; et le signal d'information indique un pourcentage de temps au cours du programme pendant lequel l'étiquette de catégorie audio et l'étiquette de catégorie vidéo sont fixées à chacune des au moins quatre valeurs.

19. Procédé selon la revendication 18, dans lequel l'étiquette de catégorie audio et l'étiquette de catégorie vidéo comprennent chacune au moins l'un d'un signal de catégorie de violence et d'un signal de catégorie de contenu sexuel.

20. Procédé selon la revendication 18, comprenant en outre l'étape de blocage d'un signal de programme entier lorsque le pourcentage de temps indiqué pour une valeur sélectionnée de l'étiquette de catégorie audio ou de l'étiquette de catégorie vidéo dépasse un pourcentage de temps prédéterminé.

21. Procédé selon la revendication 18, dans lequel l'étiquette de catégorie audio et l'étiquette de catégorie vidéo sont des signaux numériques comprenant chacun au moins deux bits.

22. Procédé selon la revendication 18, comprenant en outre l'étape consistant à faire varier indépendamment, pendant la présentation d'un programme, l'étiquette de catégorie audio et l'étiquette de catégorie vidéo, conformément à un contenu du signal audio et du signal vidéo.

23. Procédé selon la revendication 18, comprenant en outre l'étape consistant à figer une image du signal vidéo lorsque le signal vidéo est bloqué.

24. Procédé selon la revendication 18, comprenant en outre les étapes suivantes :

on masque une partie d'un écran vidéo; et
on produit un flou dans la partie masquée de l'écran vidéo.

25. Procédé selon la revendication 24, dans lequel l'étape consistant à produire un flou est accomplie en faisant la moyenne de données représentant une partie du signal de programme.

26. Procédé selon la revendication 18, comprenant en outre l'étape consistant à émettre un signal vidéo de substitution vers la station de téléspectateur sur des lignes alternées du signal vidéo.

27. Procédé selon la revendication 1, comprenant en outre l'étape consistant à émettre vers la station d'utilisateur un signal qui contient une description sous forme de texte du contenu du signal de programme.

28. Procédé selon la revendication 27, dans lequel ledit signal comprend en outre une description concernant le contenu du signal de programme pour l'étiquette d'information émise.

29. Procédé selon la revendication 1, dans lequel le signal de programme est divisé en images, et l'étiquette d'information émise est émise vers la station d'utilisateur chaque fois qu'une image du signal de programme est émise vers la station d'utilisateur.

30. Procédé selon la revendication 1, comprenant en outre l'étape consistant à annuler le blocage de parties du signal de programme.

31. Procédé selon la revendication 1 dans lequel, en outre :

le signal de programme comprend au moins l'un d'un signal audio et d'un signal vidéo, et au moins l'un du signal vidéo et du signal audio est un signal numérique; et
on émet vers la station d'utilisateur au moins l'un d'un signal vidéo de substitution et d'un signal audio de substitution, dans au moins l'un d'un créneau temporel, d'une séquence de code, d'une phase, d'une fréquence, d'une position spatiale et d'une polarité qui est différent de celui du signal vidéo et du signal audio.

32. Procédé selon la revendication 1, comprenant en outre les étapes suivantes :

on spécifie un niveau de classement d'information avec au moins l'une d'une pluralité d'étiquettes d'information, qui est émise par une station de fournisseur d'information vers la station d'utilisateur;
on génère à la station d'utilisateur, en réponse à une information introduite par l'utilisateur, une étiquette d'information locale qui est liée à une ou plusieurs des étiquettes d'information émises et qui spécifie un ou plusieurs niveaux de classement d'information qui sont acceptables pour l'utilisateur; et
on crée un menu d'information disponible sur la base de l'étiquette d'information locale, le menu d'information disponible excluant toute information ayant un niveau de classement à l'extérieur du ou des niveaux de classement spécifiés par l'étiquette d'information locale.

33. Procédé selon la revendication 1, comprenant en outre les étapes suivantes :

on génère à la station d'utilisateur, en réponse à une information introduite par l'utilisateur, une étiquette d'information locale qui est liée à une ou plusieurs des étiquettes d'information émises et spécifie un ou plusieurs niveaux de classement d'information qui sont acceptables pour l'utilisateur;
on émet l'étiquette d'information locale à partir de la station d'utilisateur vers le fournisseur d'information; et
on émet de l'information à partir du fournisseur d'information vers un utilisateur sur la base de l'étiquette d'information locale reçue de cet utilisateur.

34. Procédé selon la revendication 1, dans lequel le signal de programme comprend des pages Web.

35. Système de communication pour utiliser le procédé de la revendication 1, le système de communication étant **caractérisé en ce qu'**il comporte :

une station centrale qui émet le signal de programme et l'étiquette d'information émise;
une station d'utilisateur qui reçoit le signal de programme et l'étiquette d'information émise;
un moyen pour générer une étiquette d'information locale qui est liée à l'étiquette d'information émise;
un moyen pour bloquer des parties du signal de programme sur la base de l'étiquette d'information émise et de l'information locale; et
un moyen pour émettre un signal d'information représentant le pourcentage du temps, au cours d'un programme, pendant lequel l'étiquette d'information émise est fixée à chacune d'au moins deux valeurs.

36. Système de communication selon la revendication 35, dans lequel le moyen de blocage est adapté pour reprendre l'émission du signal de programme pendant l'émission d'un programme.

37. Système de communication selon la revendication 35, dans lequel le signal de programme est divisé en images, et l'étiquette d'information émise est émise vers la station de téléspectateur pendant chaque image.

38. Système de communication selon la revendication 35, dans lequel le signal de programme comprend au moins l'un d'un signal audio et d'un signal vidéo.

39. Système de communication selon la revendication 35, dans lequel le signal de catégorie émis comprend au moins l'une d'une étiquette de catégorie audio et d'une étiquette de catégorie vidéo.

40. Système de communication selon la revendication 35, dans lequel le signal de programme émis comprend un signal audio et un signal vidéo, et le moyen de blocage est adapté pour bloquer indépendamment le signal audio et le signal vidéo sur la base de l'étiquette de catégorie audio et de l'étiquette de catégorie vidéo.

41. Système de communication selon la revendication 35, dans lequel l'étiquette de catégorie émise comprend une étiquette de contenu de violence et une étiquette de contenu sexuel.

42. Système de communication selon la revendication 35, comprenant en outre :

un moyen pour présenter à un utilisateur un signal de programme de substitution en réponse à une étiquette de catégorie locale, dans lequel le signal de programme de substitution et le signal de programme sont des signaux numériques qui occupent au moins l'un de différents créneaux temporels, différentes séquences de code, différentes phases, différentes fréquences, différentes positions spatiales et différentes polarités.

43. Système de communication selon la revendication 35, comprenant en outre :

un moyen pour sélectionner une étiquette d'information locale; et
un moyen pour empêcher que la sélection de l'étiquette d'information locale soit changée, le moyen pour empêcher le changement comprenant un verrou à combinaison ayant une combinaison pouvant être changée.

44. Système de communication selon la revendication 35, comprenant en outre un moyen pour stocker une valeur par défaut pour l'étiquette d'information locale.

45. Système de communication selon la revendication 44, dans lequel le moyen pour stocker une valeur par défaut est adapté pour stocker différentes valeurs par défaut pour différentes périodes au cours d'une journée.

46. Système de communication selon la revendication 35, dans lequel l'étiquette d'information émise comprend un signal représentant un texte descriptif qui décrit un contenu du signal de programme.

47. Système de communication selon la revendication 35, comprenant en outre un moyen pour visualiser à la station d'utilisateur l'étiquette d'information émise.

48. Système de communication selon la revendication 35, comprenant en outre un moyen pour bloquer un signal de programme entier sur la base du signal d'information.

49. Système de communication selon la revendication 35, dans lequel le signal de programme comprend des pages Web.

50. Système de communication pour utiliser le procédé de la revendication 18, le système de communication étant **caractérisé en ce qu'**il comprend :

une station centrale qui émet le signal de programme et l'étiquette d'information émise, dans lequel l'étiquette d'information émise comprend une étiquette de catégorie audio et une étiquette de catégorie vidéo, et l'étiquette de catégorie audio et l'étiquette de catégorie vidéo ont chacune au moins quatre valeurs;
une station d'utilisateur qui reçoit le signal de programme et l'étiquette d'information émise;
un moyen pour générer une étiquette d'information locale qui est liée à l'étiquette d'information émise;
un moyen pour bloquer des parties du signal de programme sur la base de l'étiquette d'information émise et de l'information locale; et
un moyen pour émettre un signal d'information représentant le pourcentage du temps, au cours d'un programme, pendant lequel l'étiquette de catégorie audio et l'étiquette de catégorie vidéo sont fixées à chacune des au moins quatre valeurs.

51. Procédé selon la revendication 1, dans lequel le signal de programme et l'étiquette d'information sont émis par un dispositif de stockage local.

52. Procédé selon la revendication 51, dans lequel le dispositif de stockage local comprend au moins l'un d'un disque compact, d'un disque vidéo, d'une bande vidéo, d'un disque d'ordinateur et d'une cartouche de jeu vidéo.

53. Procédé selon la revendication 8, dans lequel le signal de programme et le au moins un signal parmi le signal audio de substitution et le signal vidéo de substitution, ou une combinaison de signaux audio et vidéo, sont émis par un dispositif de stockage local.

54. Système selon la revendication 35, dans lequel la station centrale stocke le signal de programme sur un dispositif de stockage local, et la station d'utilisateur reçoit le signal de programme à partir du dispositif de stockage local.

55. Système selon la revendication 35, dans lequel la station centrale stocke l'étiquette d'information émise sur le dispositif de stockage local, et la station d'utilisateur reçoit l'étiquette d'information émise à partir du dispositif de stockage local.

56. Système selon la revendication 55, dans lequel le dispositif de stockage local comprend au moins l'un d'un disque compact, d'un disque vidéo, d'une bande vidéo, d'un disque d'ordinateur et d'une cartouche de jeu vidéo.

57. Système selon la revendication 54, dans lequel le signal de programme stocké comprend des signaux de programme de substitution.

FIG. 1

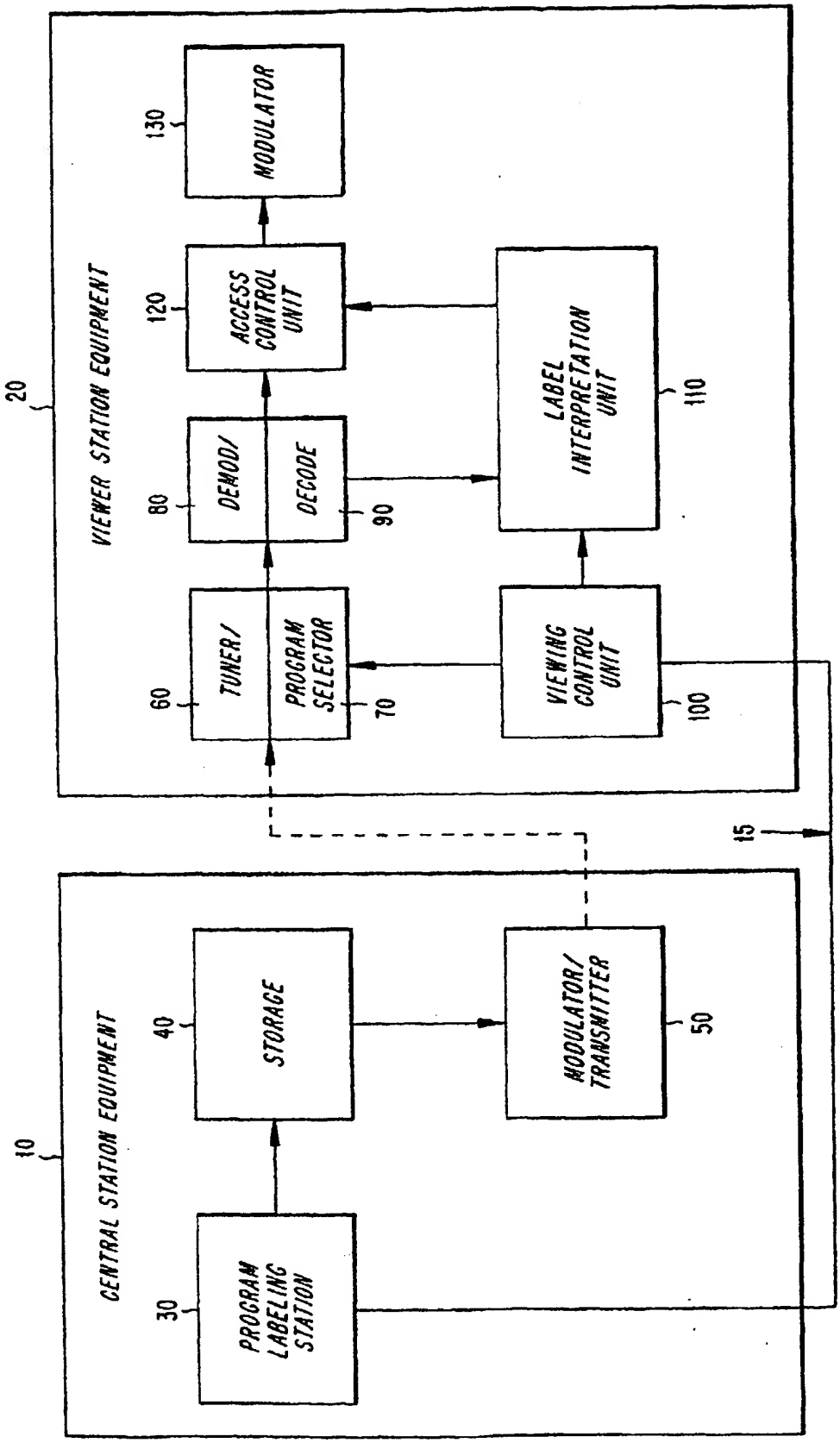

CENTRAL STATION EQUIPMENT
10
PROGRAM LABELING STATION
30
STORAGE
40
MODULATOR/ TRANSMITTER
50
15
VIEWER STATION EQUIPMENT
20
TUNER/ PROGRAM SELECTOR
60
70
DEMOD/ DECODE
80
90
VIEWING CONTROL UNIT
100
LABEL INTERPRETATION UNIT
110
ACCESS CONTROL UNIT
120
MODULATOR
130

FIG. 2

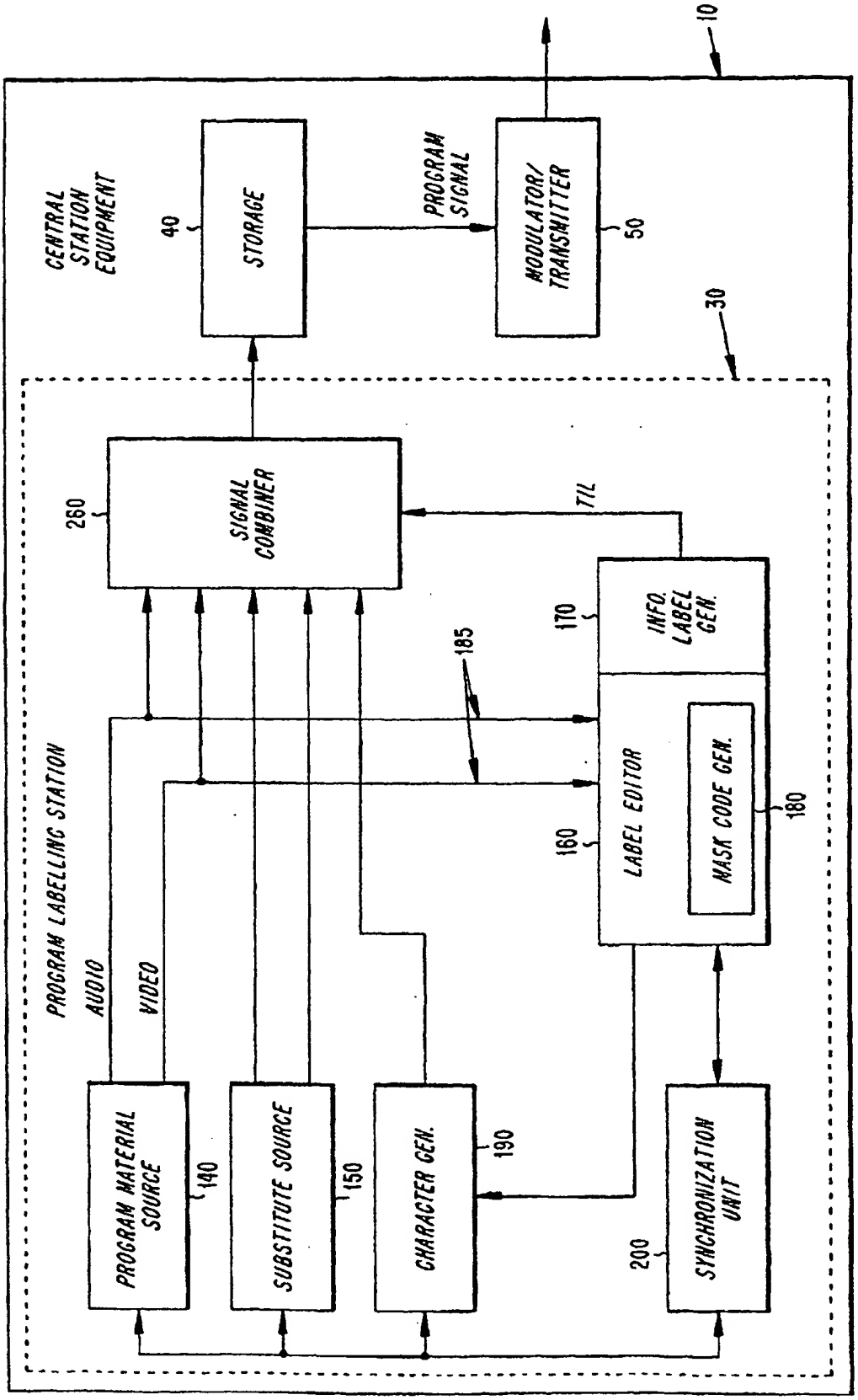

10
CENTRAL STATION EQUIPMENT
40
STORAGE
PROGRAM SIGNAL
MODULATOR/ TRANSMITTER
50
30
PROGRAM LABELLING STATION
260
SIGNAL COMBINER
TIL
170
INFO. LABEL GEN.
185
AUDIO
VIDEO
LABEL EDITOR
MASK CODE GEN.
160
180
PROGRAM MATERIAL SOURCE
140
SUBSTITUTE SOURCE
150
CHARACTER GEN.
190
200
SYNCHRONIZATION UNIT

FIG. 3

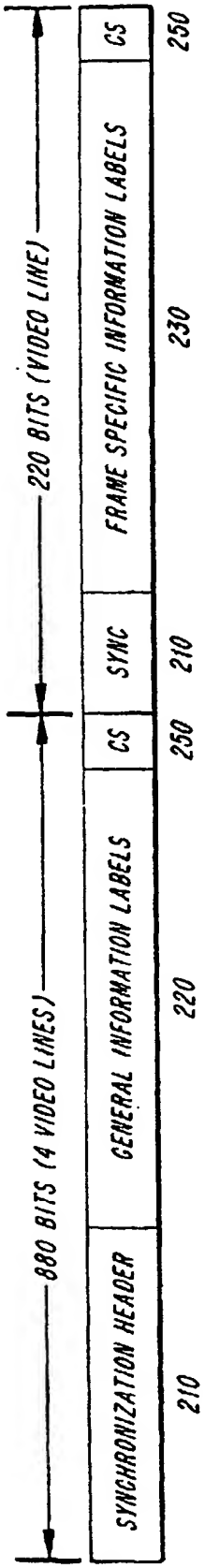

880 BITS (4 VIDEO LINES)
220 BITS (VIDEO LINE)
SYNCHRONIZATION HEADER
GENERAL INFORMATION LABELS
CS
SYNC
FRAME SPECIFIC INFORMATION LABELS
CS
210
220
250
210
230
250

FIG. 4

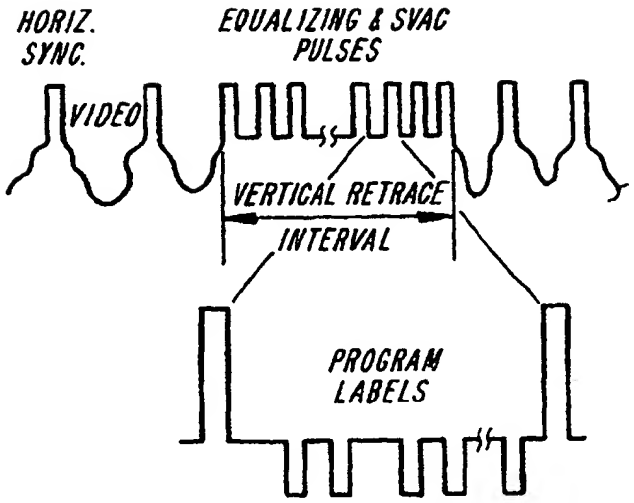

HORIZ. SYNC.
EQUALIZING & SVAC PULSES
VIDEO
VERTICAL RETRACE INTERVAL
PROGRAM LABELS

FIG. 5

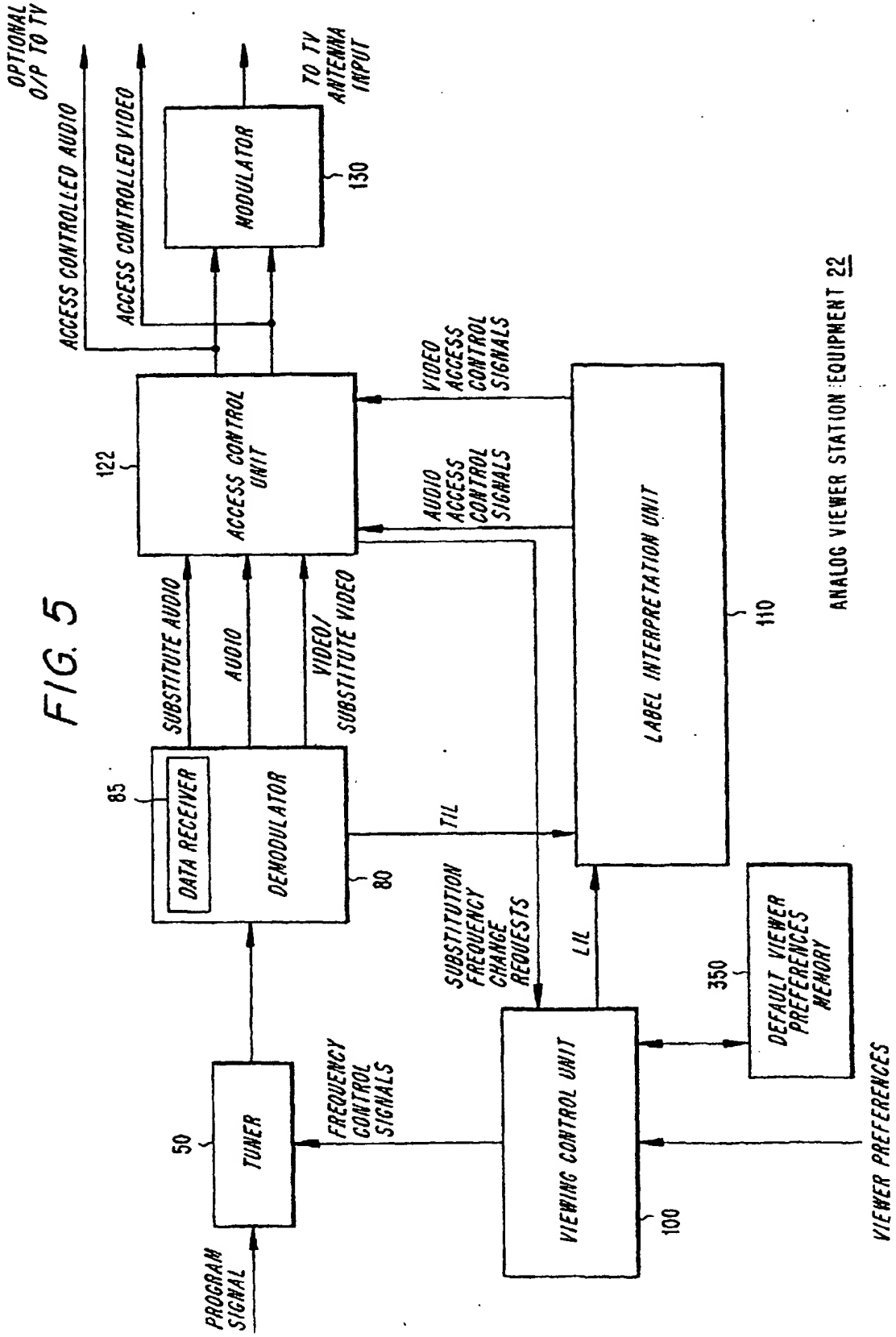
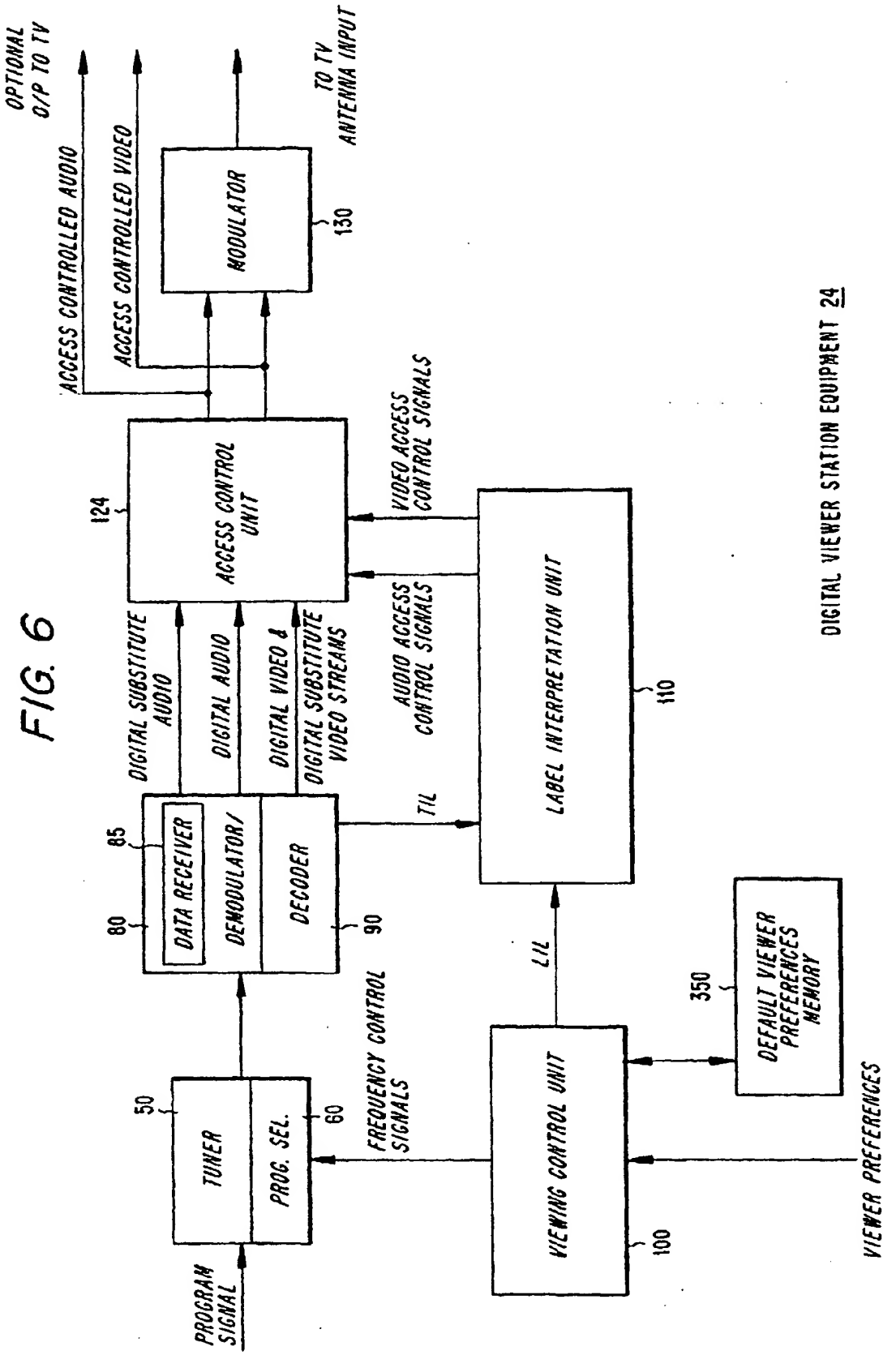

OPTIONAL O/P TO TV
ACCESS CONTROLLED AUDIO
ACCESS CONTROLLED VIDEO
MODULATOR
130
TO TV ANTENNA INPUT
122
ACCESS CONTROL UNIT
VIDEO ACCESS CONTROL SIGNALS
AUDIO ACCESS CONTROL SIGNALS
SUBSTITUTE AUDIO
AUDIO
VIDEO/ SUBSTITUTE VIDEO
85
DATA RECEIVER
DEMODULATOR
80
TIL
LABEL INTERPRETATION UNIT
110
ANALOG VIEWER STATION EQUIPMENT 22
SUBSTITUTION FREQUENCY CHANGE REQUESTS
LIL
350
DEFAULT VIEWER PREFERENCES MEMORY
50
TUNER
FREQUENCY CONTROL SIGNALS
VIEWING CONTROL UNIT
100
PROGRAM SIGNAL
VIEWER PREFERENCES

FIG. 6


OPTIONAL O/P TO TV
ACCESS CONTROLLED AUDIO
ACCESS CONTROLLED VIDEO
MODULATOR
130
TO TV ANTENNA INPUT
124
ACCESS CONTROL UNIT
VIDEO ACCESS CONTROL SIGNALS
AUDIO ACCESS CONTROL SIGNALS
DIGITAL SUBSTITUTE AUDIO
DIGITAL AUDIO
DIGITAL VIDEO & DIGITAL SUBSTITUTE VIDEO STREAMS
85
80
DATA RECEIVER
DEMODULATOR/
DECODER
90
TIL
LABEL INTERPRETATION UNIT
110
DIGITAL VIEWER STATION EQUIPMENT 24
LIL
350
DEFAULT VIEWER PREFERENCES MEMORY
50
TUNER
PROG. SEL.
60
FREQUENCY CONTROL SIGNALS
VIEWING CONTROL UNIT
100
PROGRAM SIGNAL
VIEWER PREFERENCES

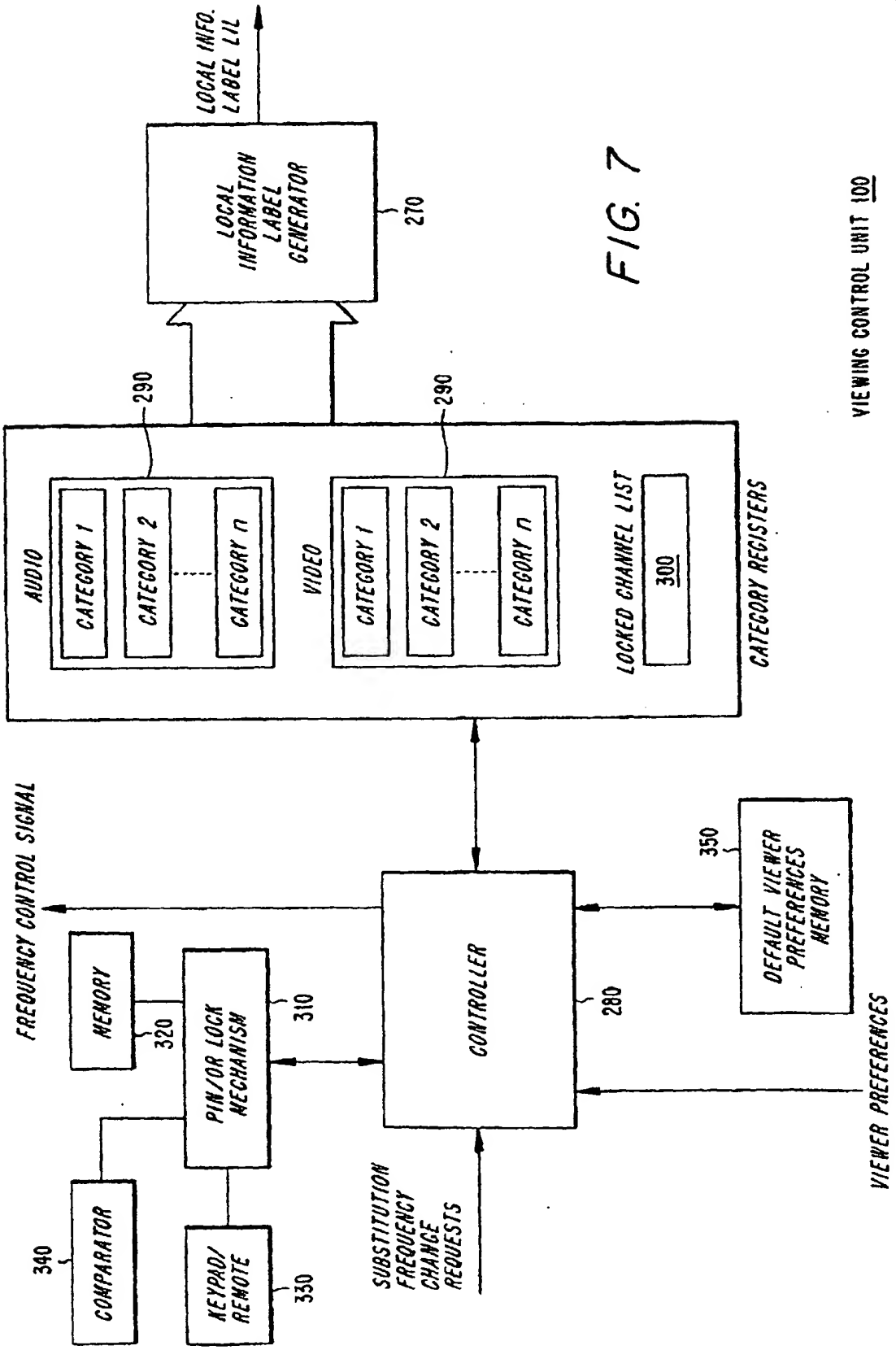

LOCAL INFO. LABEL LIL
LOCAL INFORMATION LABEL GENERATOR
270
290
290
AUDIO
CATEGORY 1
CATEGORY 2
CATEGORY n
VIDEO
CATEGORY 1
CATEGORY 2
CATEGORY n
LOCKED CHANNEL LIST
300
CATEGORY REGISTERS
VIEWING CONTROL UNIT 100
FREQUENCY CONTROL SIGNAL
MEMORY
320
PIN/OR LOCK MECHANISM
310
CONTROLLER
280
350
DEFAULT VIEWER PREFERENCES MEMORY
340
COMPARATOR
KEYPAD/ REMOTE
330
SUBSTITUTION FREQUENCY CHANGE REQUESTS
VIEWER PREFERENCES

FIG. 7

FIG. 8

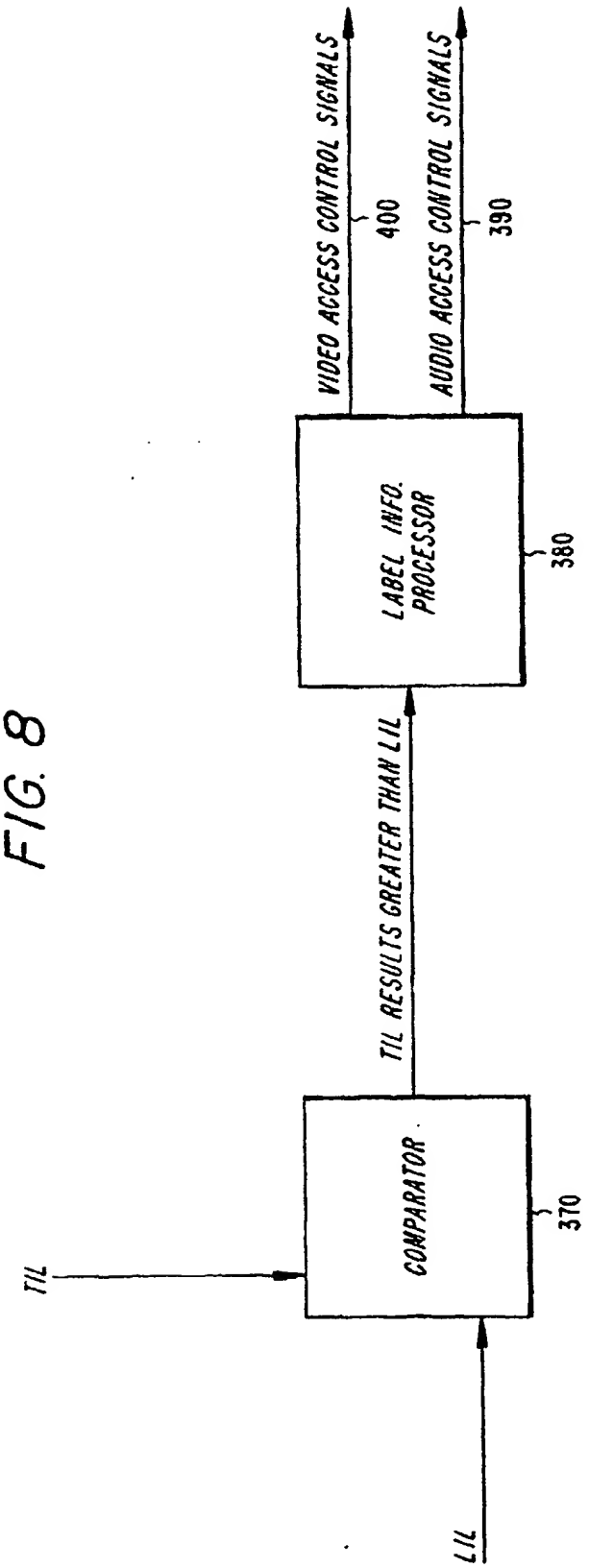

TIL
LIL
COMPARATOR
370
TIL RESULTS GREATER THAN LIL
LABEL INFO. PROCESSOR
380
VIDEO ACCESS CONTROL SIGNALS
400
AUDIO ACCESS CONTROL SIGNALS
390
LABEL INTERPRETATION UNIT

FIG. 9

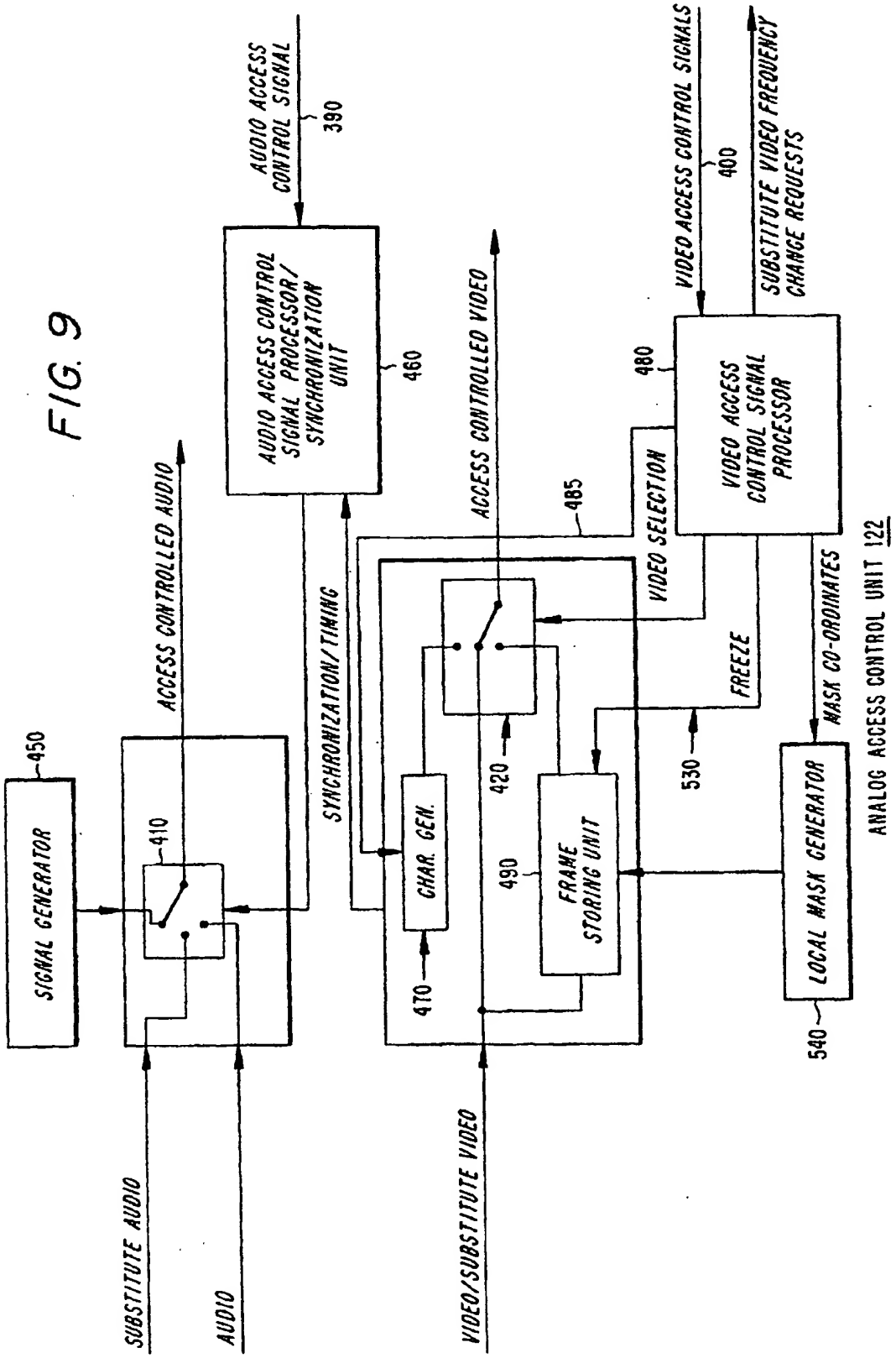
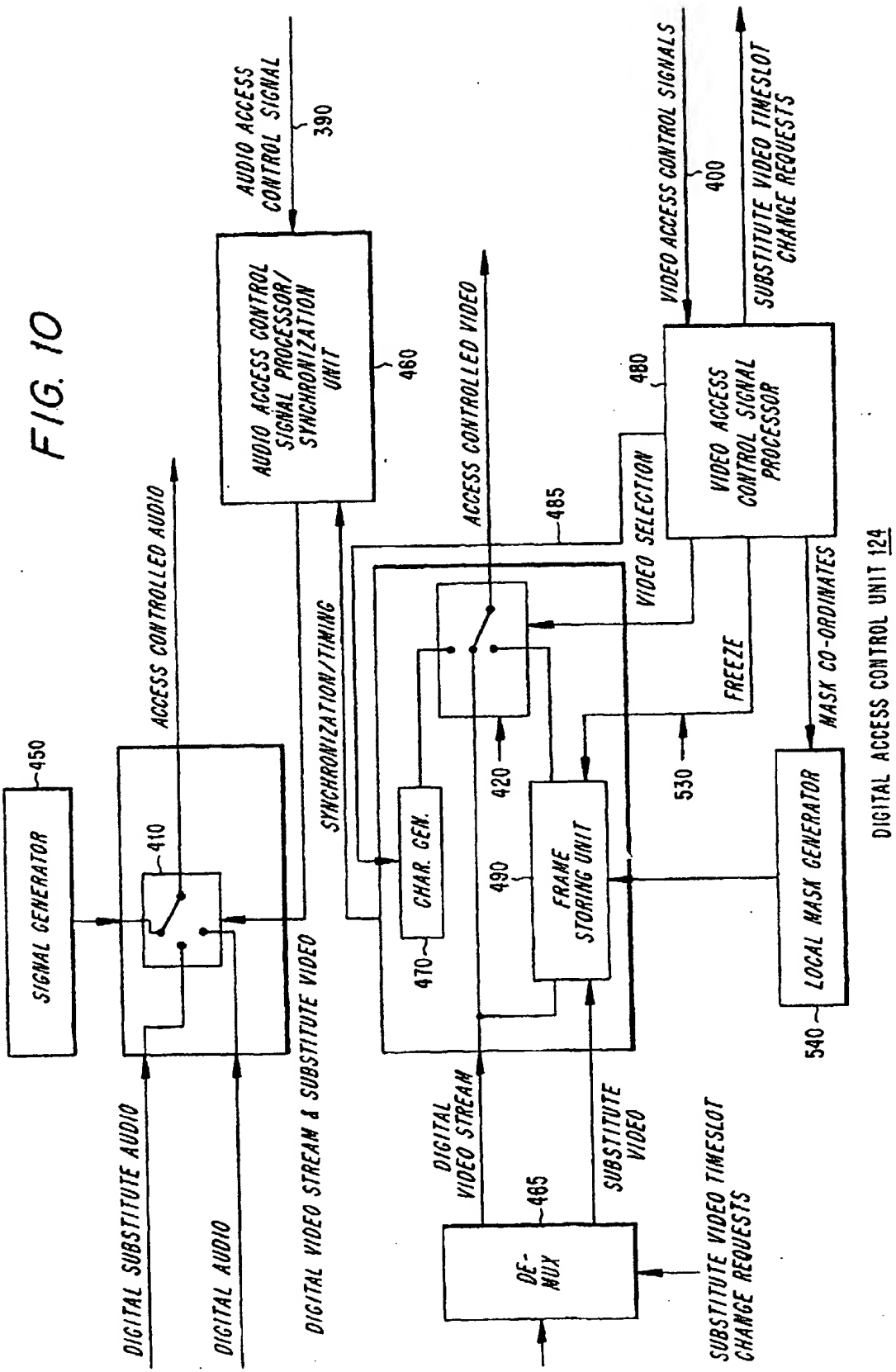

AUDIO ACCESS CONTROL SIGNAL
390
AUDIO ACCESS CONTROL SIGNAL PROCESSOR/ SYNCHRONIZATION UNIT
460
VIDEO ACCESS CONTROL SIGNALS
400
SUBSTITUTE VIDEO FREQUENCY CHANGE REQUESTS
480
VIDEO ACCESS CONTROL SIGNAL PROCESSOR
ACCESS CONTROLLED VIDEO
485
VIDEO SELECTION
ACCESS CONTROLLED AUDIO
SYNCHRONIZATION/TIMING
450
SIGNAL GENERATOR
410
CHAR. GEN.
420
FRAME STORING UNIT
490
FREEZE
530
MASK CO-ORDINATES
LOCAL MASK GENERATOR
540
470
SUBSTITUTE AUDIO
AUDIO
VIDEO/SUBSTITUTE VIDEO
ANALOG ACCESS CONTROL UNIT 122

FIG. 10


SIGNAL GENERATOR
450
410
ACCESS CONTROLLED AUDIO
DIGITAL SUBSTITUTE AUDIO
DIGITAL AUDIO
DIGITAL VIDEO STREAM & SUBSTITUTE VIDEO
AUDIO ACCESS CONTROL SIGNAL PROCESSOR/ SYNCHRONIZATION UNIT
460
AUDIO ACCESS CONTROL SIGNAL
390
SYNCHRONIZATION/TIMING
ACCESS CONTROLLED VIDEO
485
VIDEO SELECTION
480
VIDEO ACCESS CONTROL SIGNAL PROCESSOR
VIDEO ACCESS CONTROL SIGNALS
400
SUBSTITUTE VIDEO TIMESLOT CHANGE REQUESTS
CHAR. GEN.
470
420
490
FRAME STORING UNIT
530
FREEZE
MASK CO-ORDINATES
LOCAL MASK GENERATOR
540
DIGITAL VIDEO STREAM
DE-MUX
465
SUBSTITUTE VIDEO
SUBSTITUTE VIDEO TIMESLOT CHANGE REQUESTS
DIGITAL ACCESS CONTROL UNIT 124

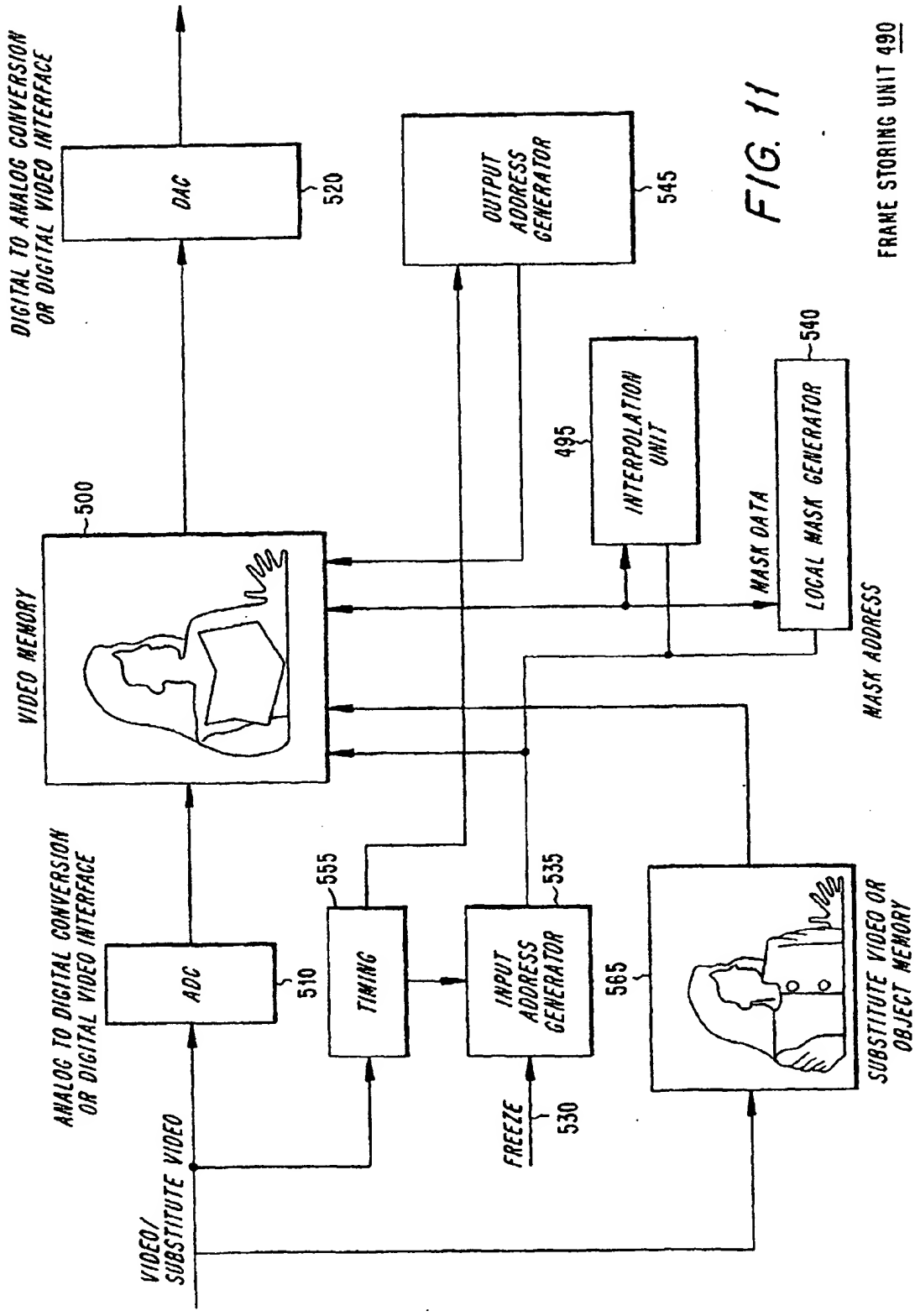

DIGITAL TO ANALOG CONVERSION OR DIGITAL VIDEO INTERFACE
DAC
520
OUTPUT ADDRESS GENERATOR
545
FRAME STORING UNIT 490
500
VIDEO MEMORY
495
INTERPOLATION UNIT
MASK DATA
LOCAL MASK GENERATOR
540
MASK ADDRESS
ANALOG TO DIGITAL CONVERSION OR DIGITAL VIDEO INTERFACE
ADC
510
555
TIMING
535
INPUT ADDRESS GENERATOR
565
SUBSTITUTE VIDEO OR OBJECT MEMORY
VIDEO/ SUBSTITUTE VIDEO
FREEZE
530

FIG. 11

FIG. 12

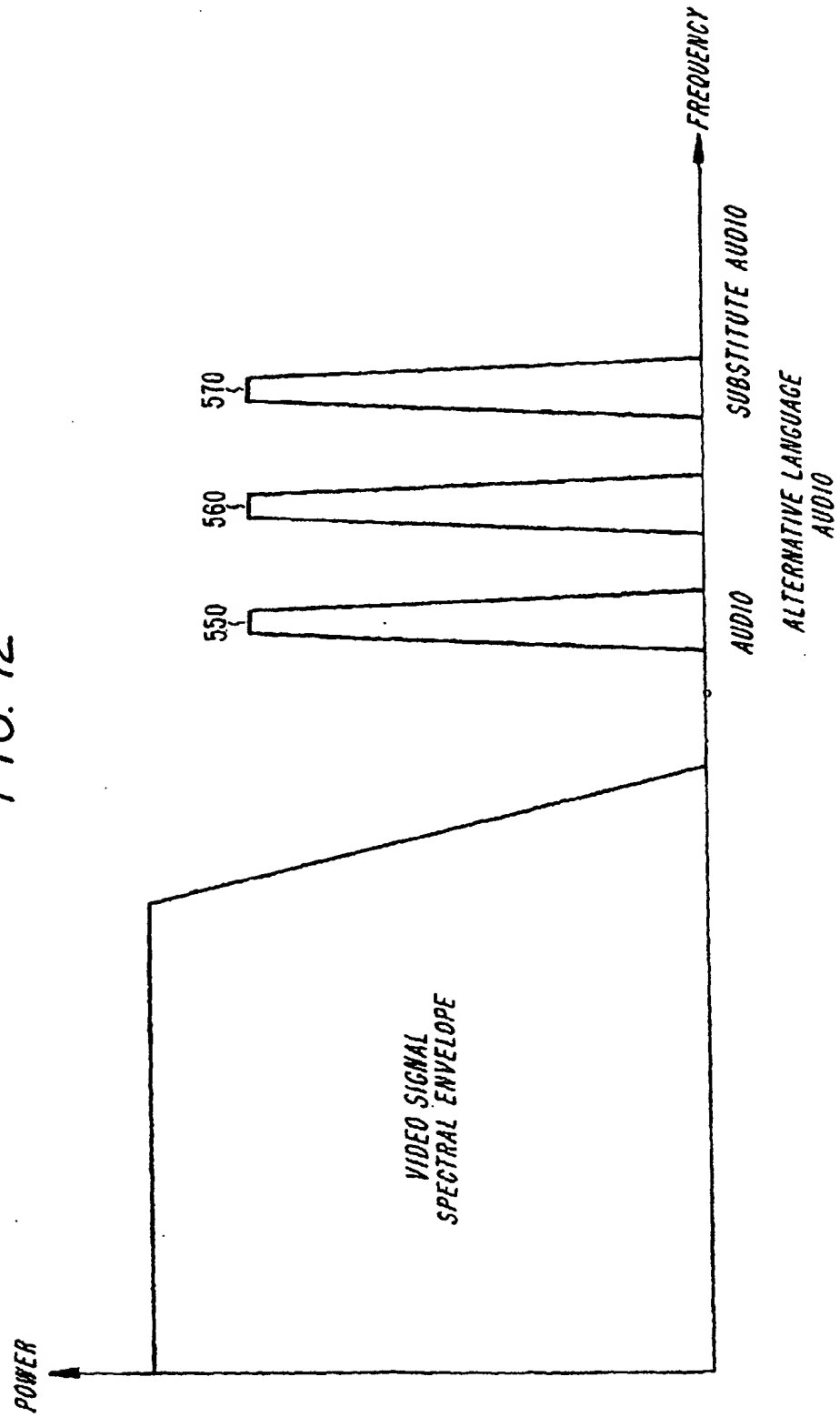
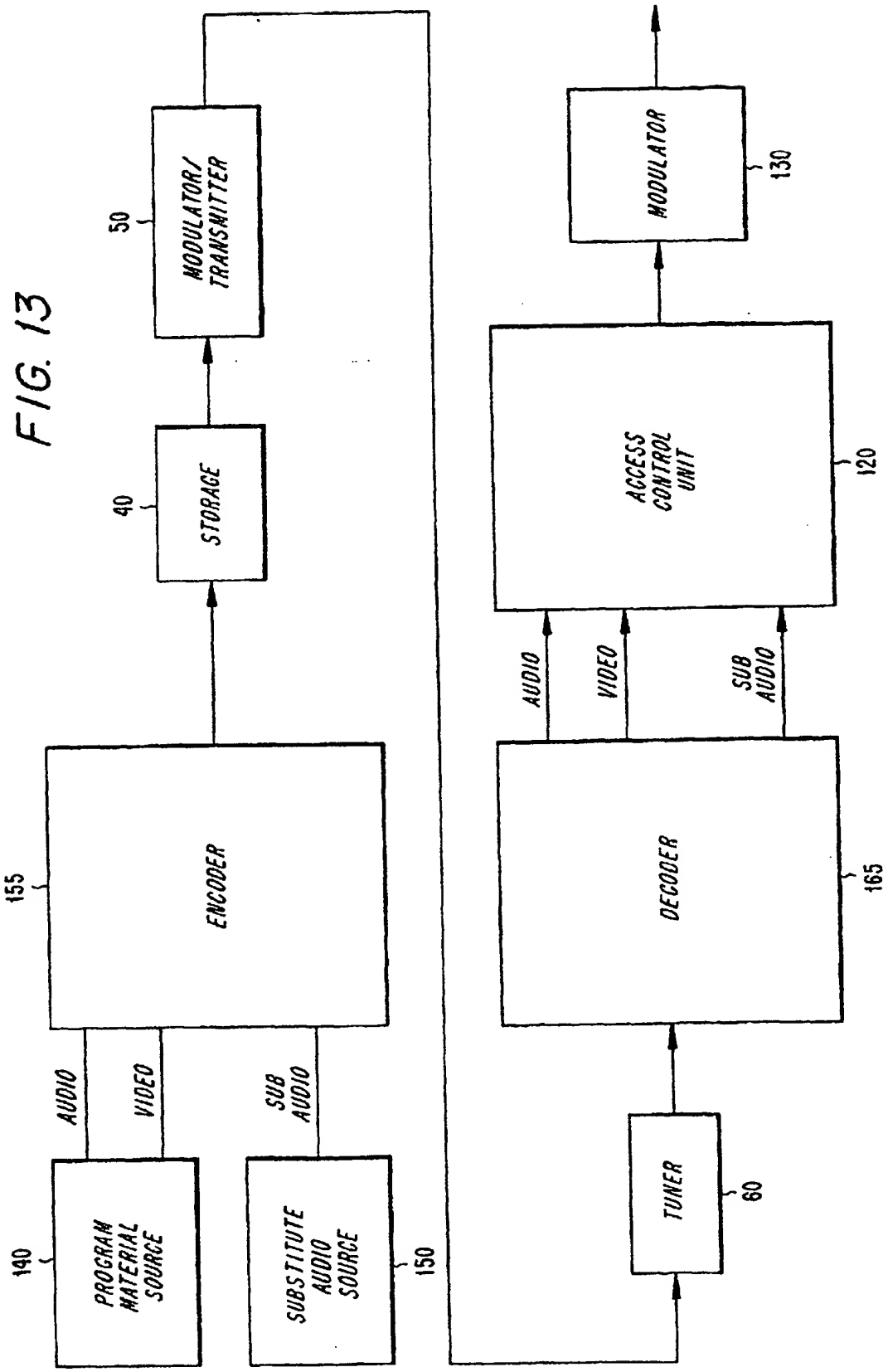

FREQUENCY
570
560
550
SUBSTITUTE AUDIO
ALTERNATIVE LANGUAGE AUDIO
AUDIO
VIDEO SIGNAL SPECTRAL ENVELOPE
POWER

FIG. 13


MODULATOR/ TRANSMITTER
50
STORAGE
40
ENCODER
155
AUDIO
VIDEO
SUB AUDIO
PROGRAM MATERIAL SOURCE
140
SUBSTITUTE AUDIO SOURCE
150
MODULATOR
130
ACCESS CONTROL UNIT
120
AUDIO
VIDEO
SUB AUDIO
DECODER
165
TUNER
60

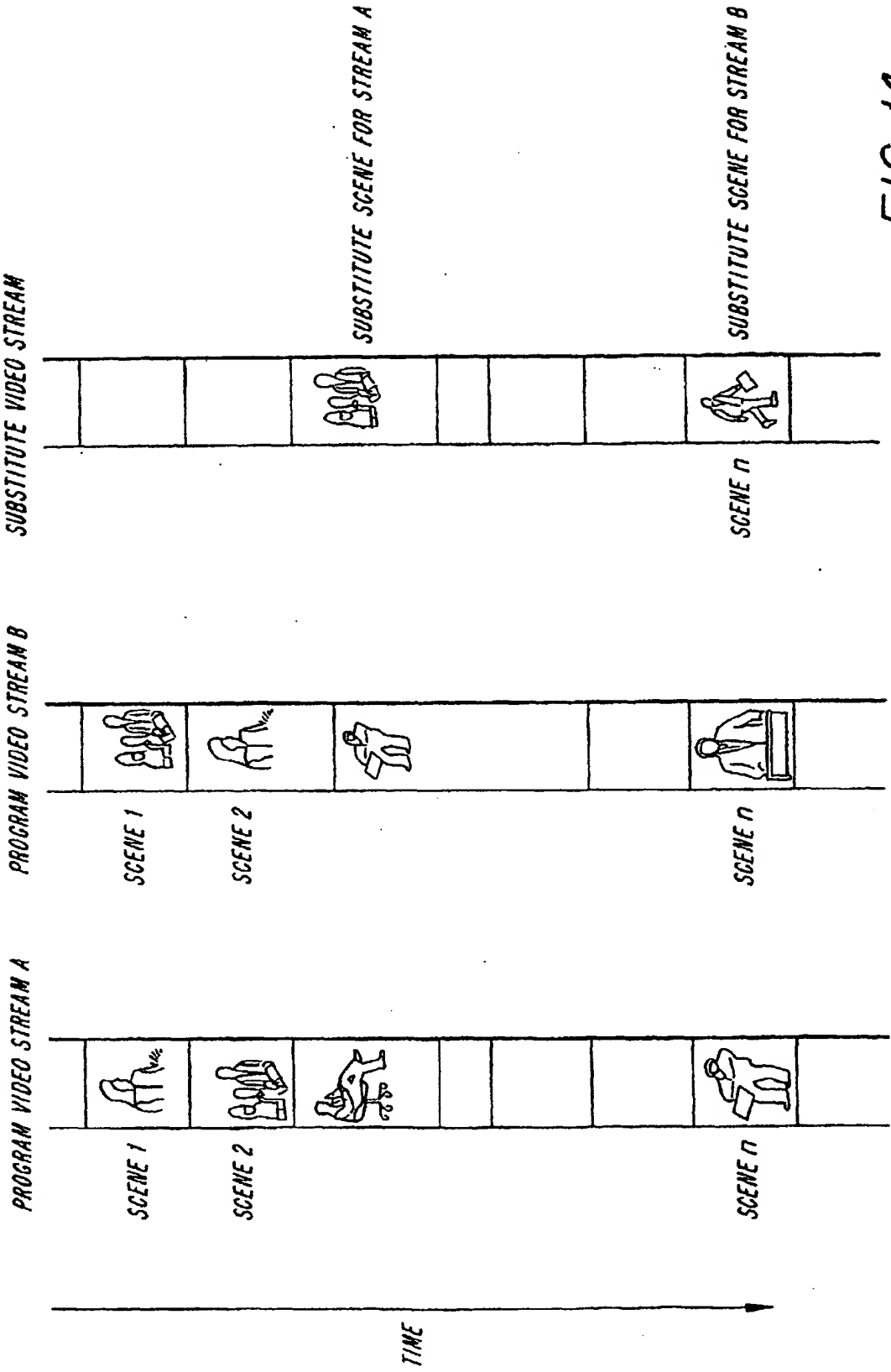

PROGRAM VIDEO STREAM A
PROGRAM VIDEO STREAM B
SUBSTITUTE VIDEO STREAM
SCENE 1
SCENE 2
SCENE n
SUBSTITUTE SCENE FOR STREAM A
SUBSTITUTE SCENE FOR STREAM B
TIME
VIDEO STREAMS (EITHER TIME OR FREQUENCY MULTIPLEX)

FIG. 14